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SOFTEX

SEASON'S GREETINGS

- CorComp Expansion System
- Axiom ParallAx TI Printer Interface
- 99/4A Auto Spell Check

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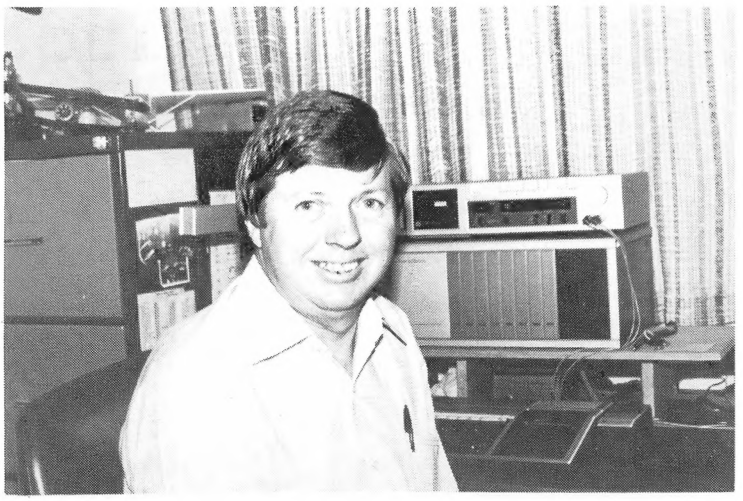
Editorial



SOFTEX has now published 5 issues in just over 12 months. Because of the amount of time required to produce one magazine, bearing in mind that this is only an after hours activity, we will in future be aiming at quarterly issues rather than bi-monthly. This has no effect on any subscribers as subscriptions were on a per issue basis, rather than annual.

As our subscriber base has increased improvements have been made to each issue to try and improve the quality of the magazine. This month we introduce a supplement for the increasing range of hardware and software we are stocking. We would like to thank all those who have supported us in our retailing over the last year and promise to continue increasing the range of goods for sale in the future.

On the back page of this issue you will find a subscription renewal form for the next 6 issues and urge you to complete this and forward it to us. Like all businesses we will have to evaluate the response received to decide on the future of this magazine. If enough support is not forthcoming then we will have to reconsider the future very carefully.

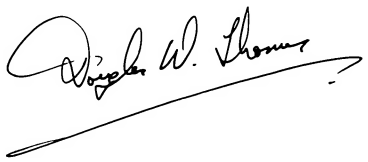
It is now nearly 15 months since Texas Instruments pulled the plug on the TI-99/4A, but it is still possible to purchase a new computer in places for $199.00. Since then several other computers have left the scene, but even those surviving are not selling at anywhere near the rate they were 12 months ago.

For a while it looked as if every one had deserted the 99/4A, with 'Home Computer Magazine' and Software companies virtually ceasing to cater for user's needs. In recent months this situation has changed and at last TI owners everywhere can boast of excellent business type software. New programmes available include Data Base Management, Spelling Auto-checker, Console Writer and TI-COUNT. CorComp has finally begun shipping the long promised Expansion System and Double Density Controller Cards. Some of the recent game software has begun to show real 3-D graphics to effect, with 'TI-Tennis' being one of the best examples seen.

Apart from the prolific growth of the 'Professional' type computer, very little has happened in the home computer scene. When studying today's 'new computers' closely you will discover that your 99/4A was 'light years' ahead of the competition and still is in most areas. I don't think the full impact of the 99/4A has sunk in yet, and it is only now that the so called 'experts' are recognizing the features it had.

With all this new software around and support available, make sure your 99/4A does not gather dust. There are even more interesting developments around the corner which will help to keep the 99/4A alive for years to come.

Finally, may I wish everyone on behalf of my Co-directors a very happy Christmas and a prosperous New Year.



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* Introduction to Multiplan
* Speech Recognition - A gimmick or a Reality

Softex Personalities

Wayne Worladge

Wayne by Wayne

Being both a reader and producer of computer magazines, I personally have seldom bothered reading "personality" type articles, as I'm usually interested in other things. However, it seems that people want to know what we do when we are not playing with our computers - that's easy - working and sleeping! (Apparently that is not enough, so I must continue.)

OK, I'll bare all. I work as a Factory Manager in the Textile Industry. My original qualification is a Science degree, majoring in Chemistry. I have worked in the Fertilizer, Food, and now Textile Industries for a variety of employers. Not that I have been any more footloose than most, it's just that some of my employers have had the misfortune to be taken over. Whenever I hear politicians talking about industry "restructuring" or "rationalization", I shudder. I just think of the trail of human misery which inevitably follows. I've been fortunate; mostly, I've been the one with the delightful task of handing out the notices. Yes, I've been on the receiving end, too, but had plenty of time to find another position. The Private Sector can be a tough life, but it does have its compensations.

My wife was a School Principal before our family came along, and she now works part-time at a Private Girls' School, to keep her hand in, so to speak. She is also doing a M.Ed., but more of that later. The children, a girl of six and a boy of two, sure have a high opportunity cost against them!

I suppose my fascination with my computer is partly due to the fact that I spend all day with people, talking, cajoling, convincing, trying to get the best out of them for all our sakes, trying to translate the employee's wants into terms acceptable to the Company, and vice-versa. Humans are not always logical, and I guess it's nice to play with something that is always logical. The brain is strange - make it work on one problem only, and it goes mad. But give it several problems, in completely different fields, and it never gets tired.

My computer is constantly in use, primarily as a word processor, for Softex, for my Wife's essays, niece's reports, User Group work. It does have the occasional game played on it, and I do the occasional program because I enjoy programming. Multiplan gets a go now and again, (more so at work), and the new DBM database will undoubtedly get a look in. The robustness of the computer never fails to amaze me - around 40 hours a week, week in week out, and never a glitch!

The departure of TI from the home computer scene was a tragedy, for the 99/4A is a really remarkable machine, begging to be further developed. But, when you think of it, what have we lost? When I meet people, and tell them I have a 99/4A, they invariably say;"But they're not made any more, are they?" Well, the answer to this is perfectly simple. TI's decision of a year ago has not changed my computer's ability to do things one little bit. I still don't have all the bits and pieces I'd like, such as Pascal, CP/M, a double density disk controller, two slimline drives mounted in the box. With all those, and Editor/Assembler, which I have, but don't utilize, I could spend years of self-education. I think the time to move to a new computer will come when the 99/4A will not do all I want it to. At this point, that seems a long way off.

Corcomp Expansion System

By Doug Thomas

SOFTEX has now received the first part of the CorComp 9900 Expansion System, being the RS232 card. As yet the 32K and Disk Controller portion of this system have not been released in the U.S.A., but should be ready by Christmas time.

From the photographs enclosed the first thing that is very evident is the size, or rather lack of size compared to the TI system. When the 32K and Disk Controller card becomes available it will slot in on top of the circuit board shown, with the appropriate output at the rear.

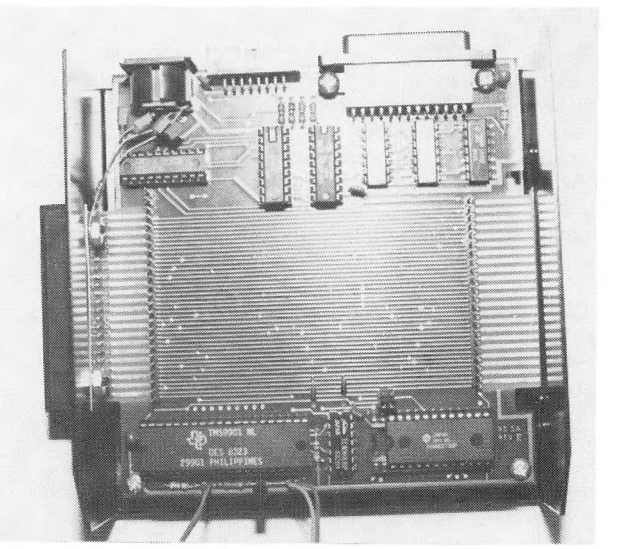
The power pack that comes with the Expansion System is almost as large as the system itself. Provision is made to connect any further Peripherals that may be required to the right side, although this is covered with a removeable plate.

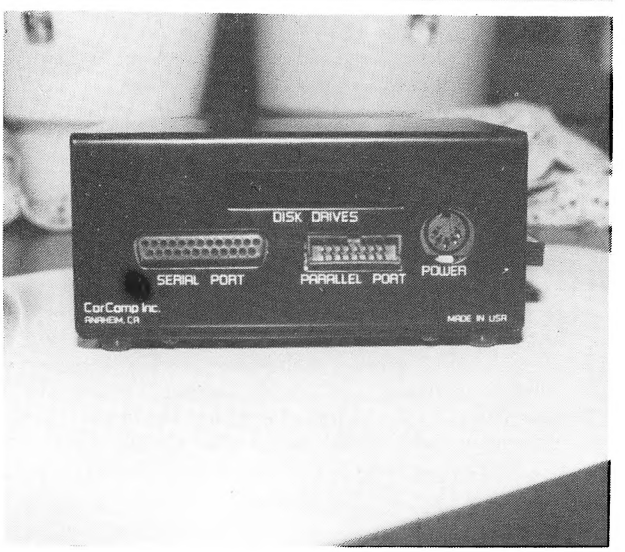
At the rear there is a Centronics and a RS232 (a second outlet can be obtained by a splitter cable) outlet with provision for the Disk Controller. This system will make it very easy to carry around compared with the TI system, but there is no provision for any extra cards that may come along, unless another plug in device is made.

A very well presented instruction book is included, better than TI's, with more technical details.

SOFTEX is planning to have this system for sale early in the New Year, with the review model being available now for $295.00 (RS232 only-110 Volt) with the full system expected to cost $595.00 plus registered postage of $11.00. Future systems imported, expected early January will have a 240 volt power supply.

In conclusion a well made product. All Disk Drives will need to be externally powered versions which SOFTEX can sell very competitively.





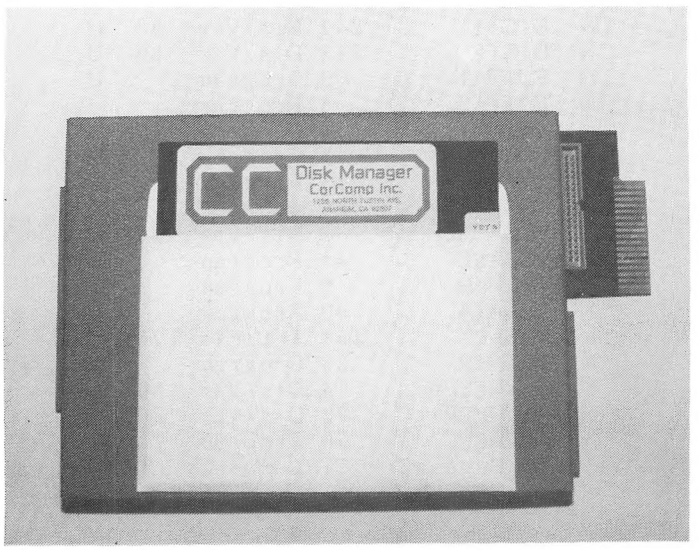
Using the Corcomp DS/DD Disk Controller

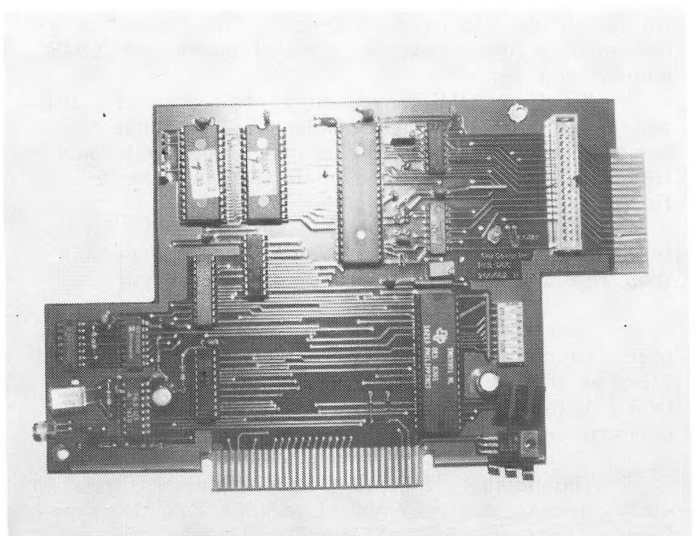
9900 DISK CONTROLLER

By Doug Thomas

After months of waiting the CorComp DS/DD Disk Controller has finally arrived, with SOFTEX now directly importing them.

As the accompanying photograph shows the controller is encased in a sheet metal cover, not as heavy as TI's, and has its Disk Manager on Disk. The version Softex has is V2.2, as the 2.1 version had some problems. The casing is easily removed by removal of 4 screws and the circuit board is exposed as shown in the photo. Note the Dip Switch which allows the changing of Disk Drive Head Step Settings. In the case of older Drives that are noisy, adjusting this will quieten your Drives, an extra bonus with this controller.





The Disk Controller is the same as TI's externally and in installation, although you can now have 4 Disk Drives attached. On power up say goodbye to the familiar TI screen and press any key screen as you are greeted with a new screen that is controlled by the Controller which reads as follows:-

```
          9900
   DISK   CONTROLLER

 Press        For
   1       Disk Manager
   2       TI Basic
   3       Extended Basic
   4

 Space Bar for Color Bar
```

Selection of the Module you wish to use can be either by pressing the required number, or by pressing the space bar twice. With some modules that have their own power up routines, eg. TEII, Data Base Management, the later method is required. When the space bar is pressed once, a color bar is shown across the screen.

The Disk Manager is on Disk and uses 98 sectors. Pressing '1' for Disk Manager loads this program (the system is similar to MS-DOS in some ways) and the following screen greets you. All screens have defaults set up, and in the case of selecting other than the default value the option is acted on without the need to press 'ENTER'.

```
I S K  M A N A G E R  V 2.2

Select Option: 1

     1. File Utilities
     2. Disk Utilities
     3. Disk Tests
     4. Configure Manager
```

Written by Steve Mildon

First you need to configure the Manager so press 4. This allows you to configure the system for your set up and then save this back to disk for use until you want to change this again. There are 2 screens displayed for this option, which are shown below. (Any time you wish to print anything on the screen during use of the Manager just press 'FCTN 0')

```
                Configure Manager

Drive Configuration

Drive 1                 Drive 2
Tracks/Side : 40        Tracks/Side : 40
No. Sides   : 2         No. Sides   : 2
Density S/D : D         Density S/D : D

Drive 3                 Drive 4
Tracks/Side : 40        Tracks/Side : 40
No. Sides   : 2         No. Sides   : 2
Density S/D : D         Density S/D : D

  From                    To
  Drive No. : 1           Drive No. : 2

Output Configuration
RS232_____________________________
_____________________________________

Screen Color: 5     Text Color  : 16

PRESS CTRL X FOR NEXT PAGE
```

```
                Page 2 of 2

Single Density Interlace : 7
(1-10)

Double Density Interlace : 10
(1-11)

Enable Turbo Option Y/N  : Y


Save Configuration to Disk Y/N : Y




PRESS CTRL E FOR PREVIOUS PAGE
```

The options for Interlace refer to positioning of sectors within tracks on the diskette, and can speed up the read write time. Turbo Option is for copying freshly initialized disks that have no bad sectors, and speeds up copying times by turning off the Verify after Write command.

Selection of 'File Utilities' gives the following options:-

```
                File Utilities

Select Option: 1


   1. Copy / Rename / Delete
      Change Protection

   2. Load and Run (Assembly file)
```

Pressing '1' brings up a screen to select the Drive required and then the following screen emerges:-

```
DSK1.TIMP                    Page 1 of 2
  26 Files    Free 241    Used 1199

CMD Filename    Size     Type        P
--- ---------- ---- ----------- ---  -
 N  CHARA1        9 Program          U
 N  DICT1       242 Dis/Var  80     U
 N  DICT2       213 Dis/Var  80     U
 N  EDITA1       33 Program          U
 N  EDITA2        6 Program          U
 N  FORMA1       33 Program          U
 N  FORMA2       15 Program          U
 N  LOAD         11 Program          U
 N  MANAGER      98 Program          P
 N  MEDICAL       2 Dis/Var  80     U
 N  MPBASE       41 Program          U
 N  MPCHAR        9 Program          U
 N  MPDATA       33 Program          U
 N  MPHLP       158 Int/Fix 128     U
 N  MPINTR       33 Program          U
 N  NAVHELP0     14 Dis/Var  80     U
 N  NAVHELP1     72 Dis/Var  80     U
 N  NAVREP       36 Program          U
  Turn Page with CTRL E - CTRL X
```

This screen allows you to Copy/ Rename/ Delete/ and change Protection in one operation. No longer do you have to type in file names one by one. By changing the 'N' under the 'CMD' column you can:-

'C' Copy, 'M' Move (copy to another disk and then delete), 'D' Delete. To change the name of the file just type over the Filename field. To change protection type under the 'P' field:-

'P' for Protect, 'U' to unprotect, 'T' for temporary to unprotect for filename change and then reprotect again. A very useful function .

A word of warning here, this option must be used to copy files onto a Disk containing other Files as if the Copy Disk option is used in the Disk Utilities section those files will be overwritten.

The number '2' option under File Utilities allows you to run Assembly Language DIS/FIX type files without the Editor/Assembler Module.

Disk Utilities gives you the following:-

```
                Disk Utilities

     Select Option: 1.

       1. Catalog     3. Rename
       2. Copy Disk   4. Initialize
```

```
                Disk Utilities

   Select Option: 2

     1. Catalog     3. Rename
     2. Copy Disk   4. Initialize

     From
     Drive No. : 1
     Disk Name :
     Free         Used

     To
     Drive No. : 2
     Disk Name :
     Free         Used
```

Note: TO Drive Files will be Erased

The Catalog option is similar to that in the File Utilities Copy option, but without the 'CMD' column. Selection of '2' Copy Disk gives you the following screen:-

```
                Disk Utilities

     Select Option: 2

       1. Catalog     3. Rename
       2. Copy Disk   4. Initialize

       From
       Drive No. : 1
       Disk Name : TIMP
       Free 241     Used 1199

       To
       Drive No. : 2
       Disk Name : SOFTEX26
       Free 829     Used 611
```

```
        Initialize Diskette Y/N : N
```

To initialize a Disk select option '4' or this can be done from the Copy Disk option. When initializing a Disk you also have option to have the Disk Manager system put onto the Disk at the same time, particularly useful if you only have 1 drive.

```
                Disk Utilities

     Select Option: 4

       1. Catalog     3. Rename
       2. Copy Disk   4. Initialize
```

```
       Drive No. : 1
       Disk Name :
       Free         Used

       Tracks/Side : 40
       No. Sides   : 2
       Density S/D : D
```

The other option is Disk Tests to test for bad sectors.

```
                Disk Tests

     Select Option: 1

       1. Read only test
       2. Destructive Write and Read test
```

In addition there is a Tool Shed Utilities built into the Interface which gives powerful Assembly Language sub-programmes from Basic. Also on the Manager Disk are 2 files named 'FORTH' and 'FORTHSAVE' that allows you to Load and Run TI-Forth from the Files Utilities section, and also allows it to be run from Editor/Assembler or the Mini Memory (requires 32K) now.

Using a DS/DD Drive such as a Chinon F-502 1440 sectors or 360K may be stored on each Disk. Whilst the price for this Card is $295.00 ea., compared with the TI single density version it is still a worthwhile investment. In my case I have in excess of 120 D/S Disks and by reformatting them to double density I will have some 60 free disks, and at a cost of $4.00 ea. that equals nearly the cost of the controller.

Those with Disk Manager 2 can use this Module with the controller instead of the CorComp Disk if they wish to, and yes the Double Density option does operate.

A well produced Manual containing 82 pages plus a 7 page Appendix comes with the Controller. The Warranty is for a period of 120 days.

SOFTEX is importing the CorComp Disk Controllers direct and they are available at $295.00 ea. plus $8.00 for registered postage. Order yours now as everyone will want one.

Software Review
Data Base Management

We all know how good programs like TI-WRITER and Multiplan are, but one area completely missed was a good Data Base program. One of the first modules produced for the TI-99/4 computer was P.R.K., which was joined later by P.R.G., which did a fine job for the basic machine, but was very limited in capacity.

I'm pleased to report that Navarone Industries from California have finally produced an excellent Data Base Management system for those with the full Expansion system, ie. 32K. memory, Disk Controller and Drive, RS232 interface and printer.

This program uses 1 module called DBM Report (although the book calls module 'DBM' system), and 1 Disk. A 36 page instruction book is provided to guide you through the program. The Disk appears to have the majority of the programs on it, including DBM Sort which was reviewed in issue No. 3.

The program is advertised as being a customized transaction, filing and reporting system for small business. It is written in Assembly language so it is very much faster, more flexible and has more capacity than P.R.K..

Complete flexibility is available in forming your own files, and the operator does not need to know programming language that is required setting up more professional programs for the PC range of computers. Data bases with up to 250 fields with 32000 records (record size limited to 255 bytes) can be created.

On inserting the DBM module and pressing any key the screen shows:-

1 FOR TI BASIC
2 FOR DBM ENTRY
3 FOR DBM SETUP
4 FOR DBM SORT
5 FOR DBM REPORTS

Select 3 for setup, and you then enter the system to create your own format for a Data Base, beginning with a blank screen. After deciding what detail you want, eg. Title, First Name, Surname etc. you begin by typing in the name of field, eg. the word 'Title', then with the 'FCTN 2' key (Insert), you key in the number of required spaces required which is represented in a red color on the screen. To shorten the length of the field the 'FCTN 1' (Delete) key is used, and when finished 'ENTER' is pressed and the cursor goes to the beginning of the next line. Continue entering names and fields as above until finished.

For records of a unique nature, eg. customer number, the record can be defined as a 'KEY' field, so that inserting the detail in this field will automatically call up the rest of the file. Several 'KEY' fields may be used in one file if required. The setup file is then saved to disk ready for use.

Next select DBM ENTRY using the setup file name and your previous file structure is presented with all the 'KEY' fields being emphasized. Entry of Data in the KEY fields will recall the files quickly. To insert new data, the cursor places itself on the first field, and after typing the information in and pressing 'ENTER' the cursor moves to the next field ready for the imput of data. Full editing facilities are available in this mode. If the field is numeric then data will be automatically right justified (defined in setup program). On completion, the ENTRY program is left by using the 'QUIT' key.

Data may then be sorted using DBM SORT which can sort files with up to 6 nested sort keys.

DBM REPORT is a powerful report program that allows you to output information as required. This program will except any DISPLAY 80 program, eg. a TI-WRITER form letter where the data in the base may be inserted. If for example a membership list was defined, then a mail label can be printed out using portion of the field information. Each field from your data file can be moved about the screen to form the layout required, then the field names, and the other fields not needed are deleted. The screen automatically scrolls to 80 characters across, line and column No's can be displayed for guidance.

Several formats can be selected, for numeric fields between 0 and 4 decimal places can be shown, the selection of '$' will create the output in dollar and cent form. By selecting 'T' the trailing blanks in the field are removed (all fields are stored in fixed format mode) allowing the printing of adjacent fields appear logical, eg. 'Fred Nerk' instead of 'Fred Nerk'.

The program is menu driven, has an inbuilt 'Help' file and comes with a Demo program. Whilst the above may appear to to make the programs somewhat complex, this is not the case. It will take time to fully utilize a powerful program like this fully, as anything from a Inventory, or Invoicing program could be constructed using this program.

SOFTEX is importing this program direct and it is available for $105.00 plus $5.00 Pack & Postage (Registered) if applicable.

This program is a must for all TI-99/4A users and now allows the full business potential to be gained from the TI-99/4A.

AXIOM ParallAx TI Printer Interface

By Doug Thomas

Ever since TI produced the Expansion Peripheral Box users have not been able to interface a printer to their computer cheaply.

Initially, the old TI-99/4 came with 'freight train' peripherals that plugged into the right hand side of the computer. One of these was a RS232 Interface, having 2 RS232 outputs only, with no access for a parallel printer. This meant that to run the printer not only did you need the TI RS232 interface, but also a Printer RS232 interface.

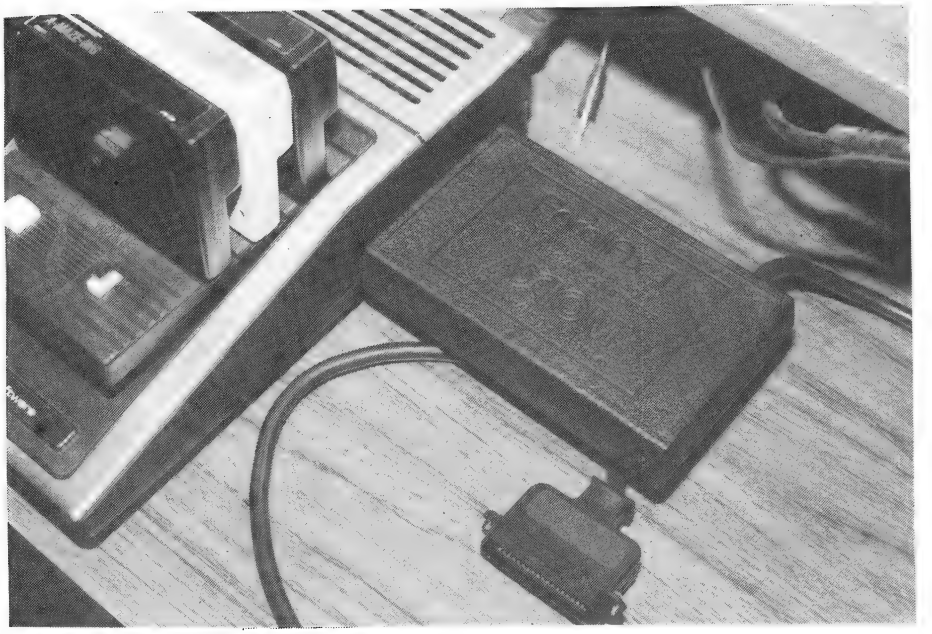
The Expansion Box version of the RS232 came in a card, having outputs for 2 RS232 ports and 1 Parallel port. The catch however was that if you only wanted a printer then the cost was high, $200.00 for the Box, and $175.00 (now $195.00) for the card. This expense could be justified if you intended expanding to the full system some time in the future.

Well at last, a Parallel printer interface is available by itself that plugs into the right hand side of the computer. This is known as the AXIOM ParallAx Interface and sells for $170.00 through Softex. If you have or purchase a Expansion Box later this can still be used as the Interface has a place for the Expansion Box cable to plug in at the rear, a good idea as it would keep that huge cable out of the way.

The Interface does require a 6 volt power supply (not supplied - a Dick Smith one will do) to power the unit unless your printer has a 250mA 5 volt power supply on pin 18, although you do need to modify Jumper 4 inside the Interface to do this.

One the good features of the Axiom is that it come complete with a 90cm. (3 feet) centronics cable attached, ready to plug directly into a parallel printer with no mucking about. The cable length should be adequate for most users, even though Softex always supplies made up cables 10 feet long to give the user a real choice of where he is going to place the printer.

A well written instruction book comes with the Interface, and even outlines modifications that can be made to suit special circumstances. One bit of confusion arises, ie. whether a indepandant power supply is needed or not. Details of alterations that can be made (with Soldering iron) include changing of defaults, including Device name, CRU Base Address or selection of power from AC adaptor/Printer.



COMMANDS and FEATURES

A built-in self-test mode is available when the Computer is switched on by holding the Space Bar down. This will print out all the characters of the printer for as long as the space bar is pressed.

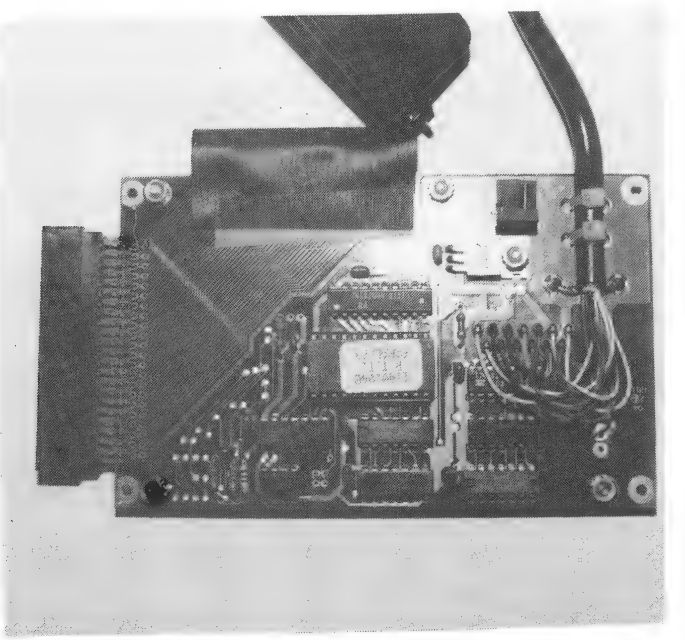
The physical dimensions are small, being 16cm x 10cm x 4.5cm.. A rubber cover is positioned over the Expansion Box outlet at the rear. The unit can be opened up by removing 4 small screws underneath, giving access to the circuit board - see photograph with this article.

The usual Printer instructions, '.CR, .LF, and .DA' can be software set. Control Code instructions to the printer are excepted without difficulty. The Left Margin can be set by 'MA=8' (8 equals characters in), with Line Length being set by 'LL=40' (40 chars. wide). Spacing between lines can be set by 'LF=2 or LF=3, etc.).

The OPEN statement can specify 'PIO' or 'AXIOM', the choice being up to the user. In the case of some early produced programs by TI where 'RS232' was the only command specified, by changing a jumper lead the interface will accept an OPEN #1:"RS232" command and print out on a parallel printer.

The printer cable is wired up as follows:-

Pin No.	Signal.
1	Strobe
2-9	Data 1-8
10	Not connected
11	Busy
16	0 Volts
17	Shield Ground
18	Power (if 250mA at 5V is available)
19	Signal Ground



A well made product, perhaps a little expensive, although is complete with no extras such as cables required. Does what is required. of it with the minimum of fuss, recommended for those wanting a printer but have no intentions of expanding further.

99/4A AUTO SPELL CHECK

By Dragonslayer Software.

TI-writer is a very good word-processor program, but if there is one thing in which it has been deficient in comparison to others, it has been the lack of a spelling checker. I expect a lot of readers may be saying to themselves "Only illiterate technologists need spelling checkers. A properly educated person does not need one." Well, there was a time when I would have agreed with you.

However, in the last year or so, I have written thousands upon thousands of words on Writer, and it is very difficult to detect all spelling and typographical errors, especially in a very long text.

In fact, it does not matter how good a speller you are, (though proficiency is a great help). It depends on how accurate a typist you are, and most of us do not fit that category. Most errors are typographical. I would venture to suggest that very few of us could do six or more pages of text without having errors in it, even after a lot of checking. This is where a spelling checker is so useful.

One should realize at the outset that if you misspell a word in such a way that the misspelt word is still a word, you won't, of course, find it - e.g. "same" could be misspelt as "dame".

The program is accessed through "3." on the TI-Writer master screen, whereupon a default file "DSK1.UTIL1" appears. Press <enter> and the program loads, shows a title screen, and then asks for the text filename. You insert the appropriate disk, tell it the filename, and the text is taken up into the computer. It then checks the text against its two inbuilt dictionaries. This step can take some considerable time, up to four minutes a page. What happens is that the letters of the alphabet are checked one by one, and the dictionary in use is shown on the top of the screen, together with the letter being checked. It runs through dictionary one first, then dictionary two.

It then asks for the filename of the User's dictionary, which you respond to accordingly. As far as Users dictionaries are concerned, you are advised that you can have as many as you wish, but each should not exceed 16K. Play it safe, and limit them to around 60 sectors. The text is again checked, and again you are asked for the User dictionary name. Assuming you have finished with your dictionaries, press <enter> again, and a multiple choice is displayed, together with the first word not recognized. Your choices are:

N. Next Word
P. Previous Word
C. Change Word
D. Disregard Word
V. View in context.
A. Add to your List

The first two are for moving through the list of words, the next to ignore that word, and go to the next. Change word shows the word, and asks for correct spelling, which you type in.

Pressing "A" stores the word for later saving into your dictionary. "V" is very useful, as it allows the word to be displayed with six or so words either side of it, as it appears in your text.

When all the words have been dealt with, you are then asked for the text filename again, (which can be ignored by pressing <enter>), and the corrected words will be saved back into your text. Be warned, though, for when this is done, unless the number of letters is the same as before, the line of text is split, similar to FCTN 2, insert character, but is not reformatted. This is no hassle if your file uses the fill command, but if it does not, you will have to reformat your text before printing out.

You are then asked for the User Dictionary filename, and the words you have decided to add to your dictionary, will be saved away. This can be a very slow process if you have a fair sized User Dictionary. The "UPDATING" step can take several minutes to be accomplished.

Now, it is possible to build up a User Dictionary of approximately two thousand words. There is a limit to the size of User Dictionaries, probably around 60 sectors, though there seems to be no limit on the number of User Dictionary files you can have. There is probably some sort of trade-off between size of file and number of files, in the respect of time taken to check.

The two inbuilt dictionaries both occupy over 200 sectors on a disk, so a double-sided drive comes into its own here. Unfortunately, while the User Dictionary can be viewed with TI-Writer, it is not possible to do so with the inbuilt dictionaries.

All in all, "99/4A Auto Spell-Check" is a most useful addition to TI-Writer. It is available from Softex, and price is $59.95, including post and packing, for two disks and a 12 page manual.

Review of the new Amust Printers

By Doug Thomas

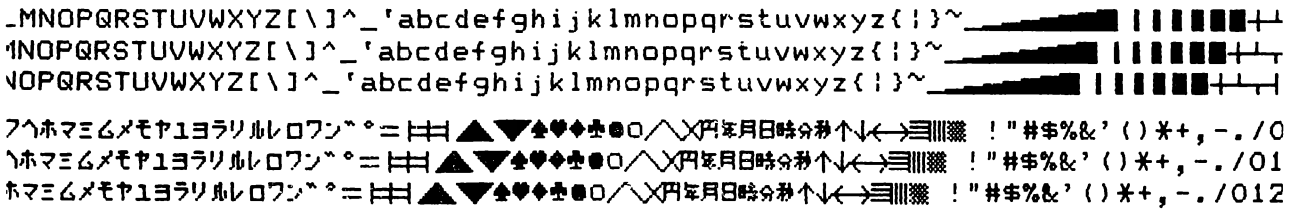
The new range of Amust Printers are now available, and not only are they cheaper than the earlier models, but they offer more features and are far better built in the case of the lower range printers.

80 DT/2

This Printer is a far cry from the original 80DT and has several features that were present on the P88 printer. It includes the rugged print head mechanism that the P88 had. It will now take up to 11" width paper, has a 9x11 dot matrix and prints at 100 c.p.s.. The other feature is a proportional pitch mode (software selectable). See specifications enclosed for more details.

SOFTEX SPECIAL for CHRISTMAS $340.00 plus $10.00 registered Post.

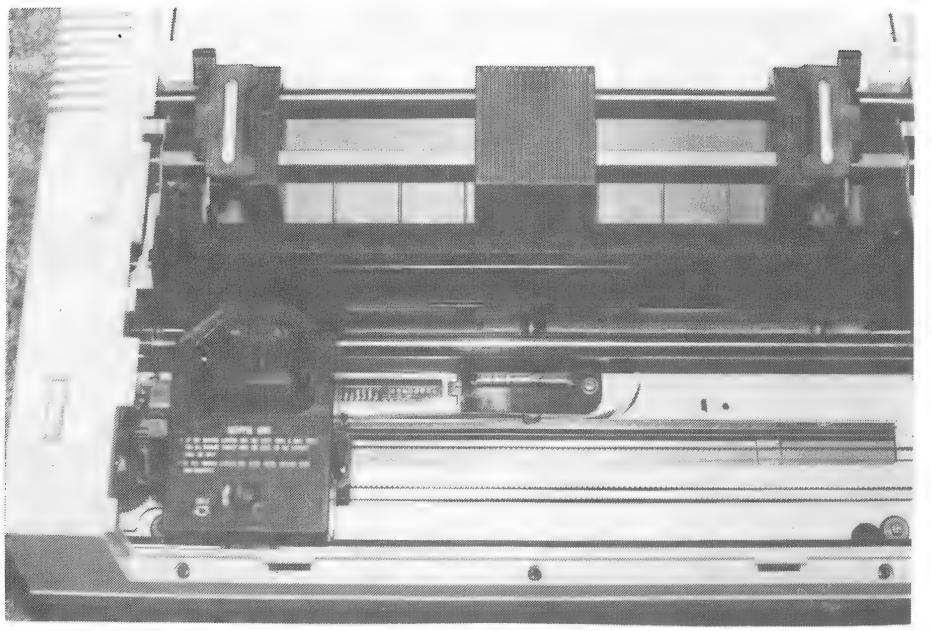
Sample of Print:



SPECIFICATIONS

Printing Method:	Serial impact dot matrix
Print Rate:	Character mode 100 characters/sec (pitch 10 CPI) Graphic mode N dots x 700 dots/sec.
Line Feed Speed:	100 ms/line (pitch 6 LPI)
Character Set:	ASCII 96 types + 41 language variations
Graphic Mode:	Correspondence of dots (Vertical:Horizontal = 1:1 possible)
Character Mode:	9 dots x 5.5 dots + sp 1.5 dots
Graphic Mode:	8 dots x 576 dots/line positions
Printing Width:	203 mm
Printing Pitch:	Fixed pitch mode 5CPI 6CPI 8.25CPI 10CPI 12CPI and 16.5CPI Proportional pitch mode N x 9 dots
Copies:	Original + 2 copies
Capacity:	Up to 0.3mm total thickness
Paper Feed:	Friction feed Roll paper: 4.5-10 in. (wide) CUT sheet: 4.5-10 in. (wide) Tractor feed Fanfold paper: 4.5-10 in. (wide)
Ink Ribbon:	Exclusive ribbon cartridge Size: 13mm x 12m Endless Colour: Black
Feeding Pitch:	1/6. 1/8, n/72 LPI
Input Power:	Both the 100v type version and the 200v type version are available.
Power Requirement:	100v type: 100v +/− 10%, 115v +/− 10% 200v type: 220v +/− 10%, 240v +/− 10% 540Hz +/− 2% or 60Hz +/− 2%
Power Consumption:	Operation: MAX. 100W Standby: 15W
Interface:	Parallel Interface Centronics standard, completely compatible with Epson MP-80 (MX-80)
Connectors:	Printer side Amphenol 36-pole connector (female) 57-40360 or equivalent Cable side Amphenol 36-pole connector (male) 57-30360 or equivalent Standard type connectors (Canon Dsub 25-pin) are applicable by using the connector RS-232c (option)
Dimensions:	401mm(W) x 337mm(D) x 99mm(H)
Weight:	8kg (Approx.) Net
Resistance:	5 Mohm
Temperature:	Operation 5°C to 40°C Shipping − 10°C to 60°C Storage -20°C to 60°C
Humidity:	Operation 20% to 90% RH Shipping 5% to 95% RH Storage 5% to 95% RH
Audible Noise:	65dB (A FAST)
Reliability:	Printer MCBF 3 million lines MTBF 1 thousand hours MTTR 0.5H unit change
Head Service Life:	Print Head Life: 200 million dots Ink Ribbon Life: 2 million characters
Standard Accessories:	Ribbon Cartridge: 1 pce. Owners Manual: 1 pce. Guarantee Card: 1 pce.
Specification Change:	The above specifications and exterior appearance are subject to change without notice for improvement purposes.

P88-2



This is the pick of printers in my opinion, and certainly is the logical choice if you ever think of up-grading to a 'IBM' class type computer. An extra switch is situated on the left hand side allowing you to select:-

DRAFT-MODE: Ordinary Dot Matrix mode at 120 c.p.s., used for drafts etc..
NEAR LETTER QUALITY MODE: Uses a double pass of print head, and produces excellent quality print (see examples and programmes 'Maths Practice' and 'MENU-MAKA' in this issue-hopefully this will help the confusion between 'O' and '0' readers have had).
PROPORTIONAL-MODE: This really compresses print and makes it look more professional looking, although the character set used is some-what different to normal print (see sample).

To select the mode you want, you can manually select this PRIOR to switching on the printer, once switched on you can change the switch, but it will not change the mode. Of course this is also available through software switching.

The standard printer has 3 IBM-PC Graphic Modes built in in addition to the normal character set. Another great feature is a 1K input buffer, and you can purchase an extra 4K Parallel buffer for $120.00.

This printer has so many features, and is certainly my pick of all of the printers on the market, unless some special application such as a wide carriage or a Daisy Wheel is needed.

SOFTEX Price: $490.00 plus $10.00 registered Post

Samples of print, Draft, NLQ, and Proportional.

```
 !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefgh
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghi
"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghij
```

```
 !"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefgh
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghi
"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghij
```

```
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz
!"#$%&'()*+,-./0123456789:;<=>?@ABCDEFGHIJKLMNOPQRSTUVWXYZ[\]^_`abcdefghijklmnopqrstuvwxyz
```

SPECIFICATIONS

Printing Method:	Wire impact dot matrix, 9 wires (0.3 mm dia)
Print Rate:	120cps (59 LPM)
Line Feed Speed:	100 msec
Print Direction:	Bi-directional with logic seeking
Input Buffer:	1 KB
Character Set:	Standard Mode 96 ASCII character with descenders 11 semi graphics, 8 international characters Italic characters IBM-PC Matrix Printer Mode 96 ASCII characters with descenders 64 block characters 9 international characters IBM-PC Graphic Printer Mode Additional ASCII contain European, Graphic, selected Greek characters, math and extra symbols. 20 block characters and programmable graphics.
Print Mode:	Draft-mode (Std. Pgm) is a high speed printing mode. The printer will print bi-directionally at 120 characters per second. This mode is used for rough drafts and preliminary documents. Near Letter-Quality mode (NLQ) allows the user to print high quality documents. The density is achieved by a double pass of the print head. Proportional-mode. This print mode gives the output document a typeset look by varying the width of the character. For example, "I" or a "1" does not take up the same space as an "M" or "W"
Font Registration:	Up to 40 characters
Character Structure:	9 x 9
Character Size:	Ordinary characters 1.99 (W) x 2.24 (H) mm Superscript/subscript characters 1.9 (W) x 1.36 (H) mm

Number of Characters per line:	Ordinary (pica/elite) 80/96 Double width elongated (pica/elite) 40/48 Compressed (pica/elite) 132/158 Compressed and elongated (pica/elite) 66/79 Superscript, subscript (pica/elite) 80/96
Paper Feed:	Friction feed, Sprocket feed
Paper Width:	Fanfold 4-10 inches Cut sheet 4-9 inches
Copies:	3 max.
Interface:	Standard Centronics-style 8 bit parallel Optional RS232C with 2K buffer (X/ON-X/OFF and ETX/ACK protocol)
Ink Ribbon:	Cassette (Service life: 3 mil characters)
Head Service Life:	Over 100 mil characters
MTBF:	2000 hours
Temperature:	5-40°C Temp.
Humidity:	20-80% humid.
Power Requirement:	AC 220V (50/60 Hz) AC 240V (50/60 Hz) AC 120V (60 Hz)
Power Consumption:	0.6A
Dimensions:	282(D) x 403(W) x 115.5(H) mm
Weight:	Approx. 7.0 kg

News Briefs

128K Memory Card Improved.

Foundation have improved their 128K Memory Card for the 99/4A. It is now possible to store files into the 96K of memory not utilized by the 99/4A. However, it would seem that it is limited to one file per 32K, which seems a bit restrictive. The extra memory acts as a "live" disk; that is, you can save and retrieve files from the memory, and do it very much faster than with a disk system. Obviously, though, one must save the files to disk before turning off the computer. Some software is on the way to fully utilize this memory.

****

Imagic have told us the prices for the TI-WRITER will be $150.00, and for Multiplan $160.00. Sure, it sounds a lot, but even at those levels they are still excellent value, in our opinion. It's still the cheapest version of multiplan around.

****

Home Computer Magazine Drops Advertising.

In a move which must be seen as unparallelled in magazine publishing, HCM has dropped all advertising in its latest issue. The reasons cited are that greater editorial freedom is now possible, and layout is not complicated by the presence of ads.

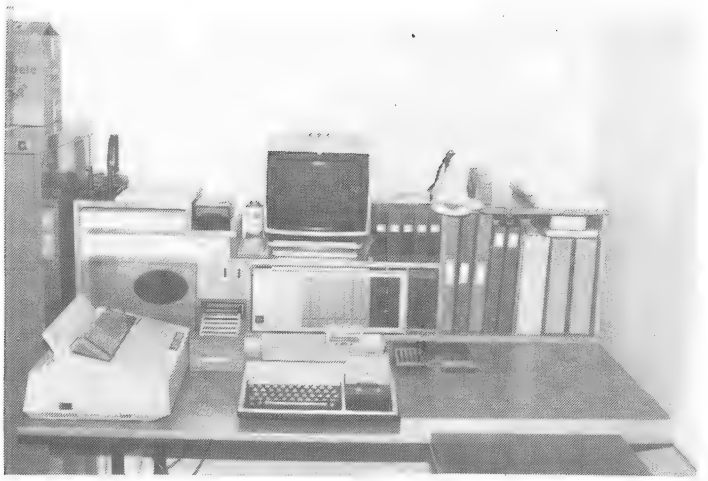
Advertising shall continue in a new publication, "HCM Digest", which shall be mainly advertising, with limited editorial content. Whether this shall ever get to Australia remains to be seen.

Melbourne Users' Group have written to HCM along the lines that the duty of a magazine is to inform, and that by dropping advertising, HCM is reducing its capacity to inform; a sentiment with which SOFTEX agrees.

Indeed, there are plenty of 99/4A users who purchase HCM for the ads., rather than the articles. I wonder if HCM have not made a considerable miscalculation? I guess time will tell.

****

Workstations Continued



Following our article last issue on workstations we are pleased to publish some further examples for you to consider.

Dear Softex,

I write in response to your recent article on Workstations.

When I designed my workstation my aim was to conceal all cables and have the printer, paper, disks, command modules, etc. accessible from one position.

My wife and I spend up to eight hours in one session working with Multiplan. Therefore, the table had to be comfortable and allow sufficient workspace.

The workstation is supported by adjustable metal trestles which can be set at 30mm increments. I've set the table top to a height of 690mm(27") which brings the centre of the keyboard to 740mm(29"). One drawback was that the trestles only had 2 screws to attach to the table. This would have been unstable considering the weight they had to support. To overcome this I placed 50x25mm dressed pine along each side of the trestles' horizontal support.

The workstation is constructed on a standard sheet of chipboard 1500x900mm. The back section is constructed on a box frame made from 50x25mm dressed pine(actual 42x19mm). On top of the frame is a standard sheet of chipboard 300mm wide. This elevated the Expansion Box 58mm off the table.

By elevating the back section of the workstation, I was able to construct the raised platform to the right of the computer. This platform serves 3 purposes. It conceals the Expansion Box plug(actual cable passes through the table), contains my cassette recorder, and best of all, provides a writing space for those of us that are right handed.

In the left rear section of the workstation I placed a speaker. Behind the speaker is a six-pack power board, the transformer, and enough space to provide adequate ventilation.

Above the speaker are 2 compartments large enough to hold one ream each of A-3 and A-4 paper.

To the right of the speaker is a metal plate with two switches. The metal plate is used to ground static electricity. The first switch supplies power to the power board and the second switch turns on the second disk drive. Below the switches is a drawer which holds eleven command modules.

I used timber to elevate the second disk drive to the same height as the first, allowing all vents to be fully exposed to provide ventilation.

Now a few notes about the computer cables. All cables to the rear of the computer pass through holes in the table positioned far enough behind to avert strain on the plugs. These cables are secured underneath by plastic clips. Just behind these holes I have placed a wooden strip. This strip serves two purposes. First, it protects the cables passing through the table. Second, it serves as a stop for a piece of 3 ply which is kept in the gap above the Expansion Box. The 3 ply, when used, is placed against the wooden strip with its top resting on the monitor shelf. This enables me to prop books, magazines, text, etc., directly in front of the keyboard.

This workstation cost $155.00 to construct. The following is a breakdown of costs:

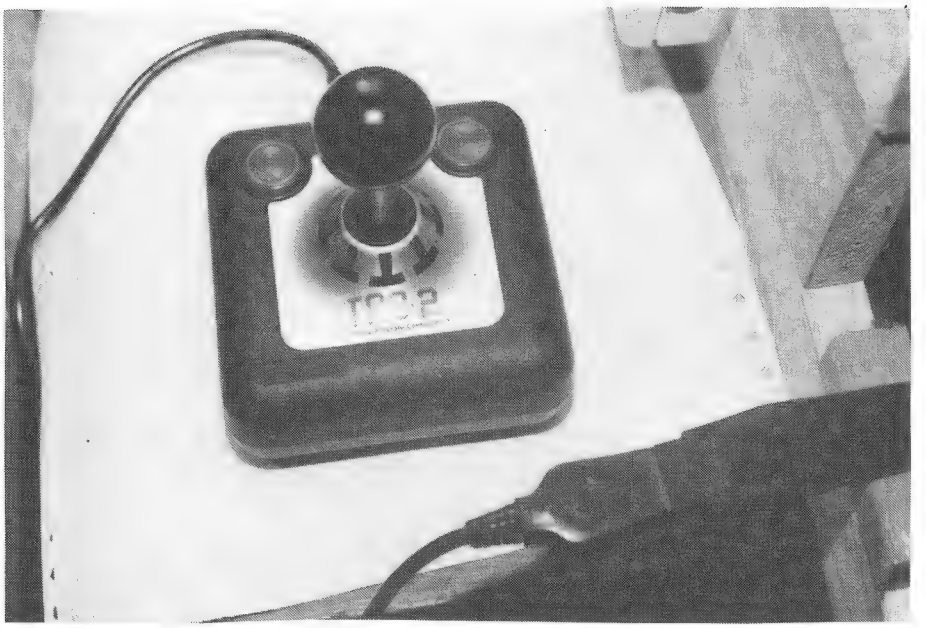
```
$55.00 Timber
$70.00 Trestles (IKEA)
$ 5.00 8g 1.25" particle board screws
       nails
$ 8.00 (2)240v 12a switches
       wiring
$ 4.00 plastic clips
$ 8.00 Estapol

$155.00
=======
```

Construction time was roughly 20 hours using basic tools. If anyone is interested in constructing a similar workstation, feel free to contact me.

Terry Houge
25 McDonald St.
Morwell, Vic. 3840
(051)34-7015

TAC-2 Joystick

By Wayne Worladge



I acquired my set of TI joysticks sometime in early 1982, and they have survived "Invaders", "Attack", Munchman", "TI-Toad", "Entrapment", and, latterly, "Cubit". Along the way, they also were used in "Tombstone City", a much underrated game which would have to be harder on joysticks than any other game I have experienced.

It was this latter game where I first had the vague feeling that perhaps the Joysticks weren't quite up to the game, but I dismissed the thoughts, blaming sadistic programmers.

Then Jack Jeffs made his own set of joysticks, (See SOFTEX No.1), and I had the opportunity of trying them out. They felt very positive, like a good manual gearbox, but Jack wasn't interested in parting with them, and I didn't have time to make them, so I continued on as-was.

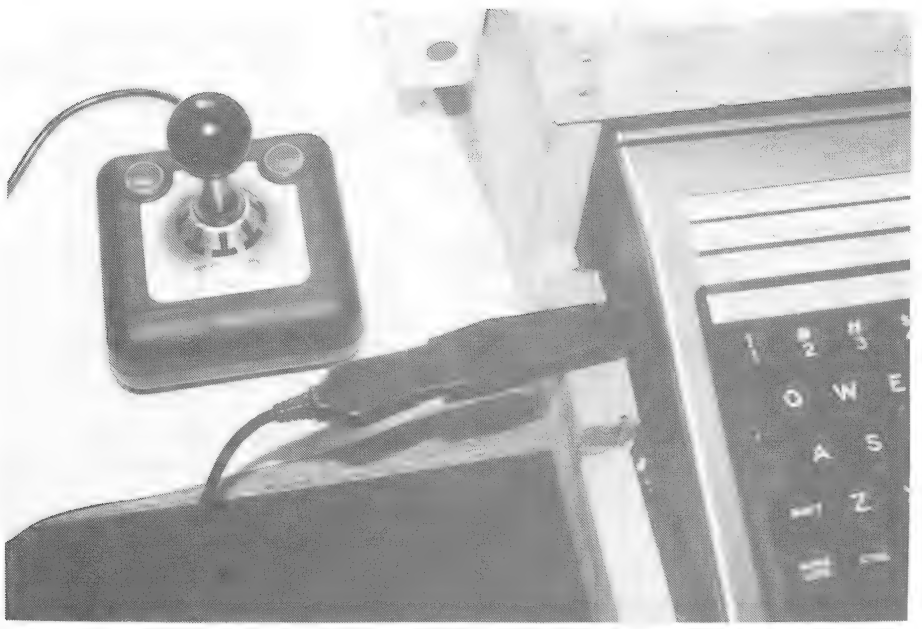
I had been aware of allegations that there were "better" joysticks available, and that one's scores in games were, to some extent, dependent upon the joystick used, but I hadn't taken a lot of notice, as I don't play games all that much, and the money was always needed for something of greater importance.

Then disaster struck, and one morning I went to my study to find a broken handle on the floor - someone had trodden on one of the pair. Araldyte fixed the problem, but at a User Group meeting a few weeks later, the handle of the second joystick was broken by an over-enthusiastic player. More araldyte! Then the first one broke again, and I could see something had to be done.

Stuart Brown, of Imagic, had shown us the TAC-2 joystick at a Meeting, and having decided to get a replacement, I acquired one from Imagic (along with a two-year guarantee), and an adaptor from Gametronics.

The TAC-2, in appearance, is quite different to the TI product. It is square, (100 by 100 mms.), thicker in the body, (around 40 mms.), and has a chromed central shaft ending in a 30 mm. diameter black ball. Indeed, harking back to cars again, it really does look like the gear lever of a sports car.

There are two fire buttons, in the top left and right corners, thereby catering for play with either hand. Well, how does it play? To answer, very well indeed. I dragged out an old favourite, "Invaders", and in the second game, got to level four, something I could rarely achieve previously, even when in form, as it were. For those who can remember, one way of playing that game is to shelter behind a barrier, shoot a chimney through it, and attack the invaders as they pass. With the other joysticks, it was a real art to return to such a barrier, and to position oneself exactly under the same chimney. There is a technique to move a very small amount, and that is to smack the joystick rather than move it. Well, with the TAC-2, such fine positioning is much easier.



They are "noisy", in that they do click and clack, but one soon gets used to that. In all they appear to be an excellent product, and I do believe one's scores would improve with their use.

I only have two minor gripes. It would be nice to have a lockable grid so that for games which only require rectangular movement ("Munchman", for instance), one is prevented from moving in the diagonal direction. Still, for the price, it is excellent value. The second gripe does not even concern the joystick, but the adaptor. This is necessary, for the joystick is not designed for the TI 99/4A, but Atari- type computers. The adaptor is nearly 80 mm. long and, of course, plugs into the game port on the left side of the console. Even with the other joysticks, the plug occasionally fell out, but with the adaptor as well, the whole thing sags somewhat alarmingly, and I expect it to fall out at any time. (It hasn't, yet.) It is clear that it will need supporting, in some way.

Erata

ADVANCED USE OF BASIC.
Vol. 1 No. 2. Page 33

Change line 420

```
420 A(I)=INT(RND*10)
```

MAIL LABEL PROGRAM.
Vol. 1 No. 3. Pages 15, 17

Change lines as follows:

```
160 DISPLAY AT(2,1)BEEP:"ENT
RY";I

2330 IF B$="Y" OR B$="y" THE
N C$=SEG$(LN$(1),1,1):: GOTO
 2370
```

AUTO-RUN PROGRAM.
Vol. 1 No. 3. Page 23

Change and add following lines:

```
100 CALL CLEAR :: DISPLAY AT
(12,1):"CATALOG? Y/N: Y" ::
ACCEPT AT(12,15)SIZE(-1):R$
:: IF R$="Y" OR R$="y" THEN
 106 ELSE CALL CLEAR :: END
104 REM DELETE REM IN NEXT L
INE FOR SINGLE DISK PROCESSI
NG. DELETE THIS AND NEXT LIN
E FOR MULTIPLE DISK PROCESSI
NG.
106 REM A$="DSK1." :: GOTO 1
50
110 CALL CLEAR :: DISPLAY AT
(10,2)BEEP:"Enter DSK No.  D
SK1." :: ACCEPT AT(10,20)SIZ
E(-1)VALIDATE("123"):A$ :: A
$="DSK"&A$&"."

   DELETE LINES 120, 130, 140

280 CALL KEY(3,K,G):: IF G<>
0 THEN IF K<49 OR K>84 OR (K
>52 AND K<65)THEN 280 ELSE 2
90 ELSE 280

390 IK K>50 THEN 440 ELSE DI
SPLAY AT(23,1):"SELECT" :: C
ALL SCREEN(7)
400 CALL KEY(3,K,G):: IF (G<
1)OR(K+X-64>I)OR(K<65)OR(K>6
3+E)THEN 400
405 IF P$(K+X-64)="P" THEN D
ISPLAY AT(23,1):"CANNOT DELE
TE-PROTECTED FILE" :: DISPLA
Y AT(24,1):"*PRESS ANY KEY T
O CONTINUE*" ELSE 420
410 CALL KEY(3,F,G):: IF G<1
 THEN 410 ELSE 230

430 DELETE A$&C$(K+X-64):: G
OTO 150

490 CALL KEY(3,F,G):: IF G<1
 THEN 490 ELSE 230
```

Book Review — "TI BASIC"

by Richard Haskell and Jeffrey Haskell

Published by Prentice-Hall Inc., Englewood Cliffs, New Jersey, 1984.

Reviewed by Wayne M.Worladge.

This second book sent to us by Prentice-Hall is presented in a completely different style to "Kids and the 99/4A", (reviewed in SOFTEX no.4), despite the objectives of the authors being similar.

The authors have presented an "adult" instruction book, as it were. This book is written in serious, adult language, but is also, thankfully, clear and concise.

According to the descriptions of the authors, Richard Haskell is a Ph.D. graduate who holds the positions of Professor of Engineering and Chairman of Electrical and Computer Engineering at Oakland University in Michigan. He has written seven books for Prentice-Hall, most of them BASIC Language instruction books for the various popular home computers, though he has one assembly language book (for the Apple II) to his credit. Jeffrey Haskell is a graduate of the same university in electrical and computer engineering.

One would assume, from the above curriculum vitae, that they would know what they were talking about, and the book reflects this. Perhaps the Chapter Headings will tell you more than I can:

1.LEARNING TO USE THE TI-99/4A KEYBOARD
2.LEARNING TO PROGRAM IN BASIC
3.LEARNING MORE ABOUT PRINT
4.ENTERING DATA FROM THE KEYBOARD: LEARNING ABOUT INPUT
5.A REPETITION LOOP: LEARNING ABOUT FOR....NEXT
6.MAKING CHOICES:LEARNING ABOUT IF....THEN AND IF...THEN....ELSE
7.LEARNING TO USE LOW RESOLUTION GRAPHICS: DISPLAYING THE FLAG
8.LEARNING MORE ABOUT LOOPS: ANOTHER LOOK AT IF....THEN
9.LEARNING TO USE GOSUB & RETURN: SUBROUTINES
10.MAKING BAR GRAPHS: LEARNING ABOUT READ...DATA
11.LEARNING TO USE ARRAYS
12.LEARNING MORE ABOUT STRINGS
13.INTERACTIVE AND THREE-DIMENSIONAL GRAPHICS
14.SPRITE GRAPHICS
15.LEARNING TO PUT IT ALL TOGETHER

It can be seen from the above chapter headings that the authors really do specify that their book is about learning.

FEATURES

The features that set this book above the rest of the pack are:

a) the method of instruction of the authors is for the learner to get hands-on experience. Every point they make is illustrated with a program, however short. In most cases, the program is presented in steps. A few lines will be typed in which demonstrate the first point, then a few more which demonstrate another, and so on. At the end of the segment the program is listed in full.

b) program lines in the text are printed in darker print, and are very clear. However when program listings are printed in diagrams, or in whole at the end of chapters, an imitation of a dot-matrix printer is used. There is no need, in my opinion, for this simulation. Perhaps it may look like the output from a (poor quality) dot-matrix printer, but what possible advantage is that in ease of reading?

c) The book is liberally interspersed with photos, real or simulated, of what the monitor screen appears like when the example programs are run. This is really an excellent feature, and if hard to read at times, really does have value, as the learner can see exactly what is supposed to happen.

d) Each chapter has exercises for the learner, in which he/she has the opportunity to test the knowledge gained in that chapter.

CONCLUSIONS:

This is a really professional book, one which will be of immense benefit to learners and beginner programmers. Both extended and normal BASIC are covered. Recommended retail price was $23.95, in my opinion, excellent value.

GAME REVIEW — "BRICK-BAT"

By Wayne Worladge

[Declaration of Interest: As a Director of Softex Pty.Ltd., I have a financial interst in this game, in that Softex Pty.Ltd. are marketing it.]

Notwithstanding the above statement, I feel I can be impartial in reviewing this game. The reasons are that I did not write it, and indeed, did not play it at all prior to SOFTEX deciding to obtain the rights for its sale.

This game started its life as an entry in the Melbourne User Group's Software competition, held in 1984. It was written by Mark Eddy of Cheltenham. It was later improved by Bernie Elsner and Lindsay Preece, both of Perth.

This game is both old and new. Old, insofar as it is similar to those early video games one could purchase to run on one's TV; that is, a bouncing ball game. I expect most of us have either had such a game, or at least played one. The version I had gave you a choice of squash, hockey, tennis and one other,(a practice game, I think). Well, "Brick-Bat" is a bit like those sort of games.

It is new insofar as it gives a new slant on an old concept, and is written in assembly, which, while not new, is beyond the capabilities of most TI owners.

The task is simple. The game starts with a vertical brick wall on the screen, to the centre right, on a blue background. One way of visualizing the game is to pretend you are on a squash court, and there is a floor-to ceiling brick wall between you, the player, and the back wall. Each time you hit the brick wall a brick, or a number of them evaporate. The only difference is that, unlike a squash court, the ball can also bounce off the ceiling. To the left is a white bat, which can be moved up and down with the "S" and "D" keys. (Yes, "S" and "D", they're easier to use than "E" and "X".) At the start of the game, the bat is centrally located on the left border, and a round, black ball appears from the centre face of the wall, and hits the bat, always providing you do not move the bat. The ball bounces off the bat at an angle, and after that, you have to prevent the ball passing your bat, and exitting on the left side of the screen. The ball will rebound from the top and bottom edges of the screen.

Each time the ball hits the wall, one or more bricks disappear. The objective of the game is to remove all the bricks from the screen, without running out of balls, of which five are provided at the start. Should you succeed, another wall appears immediately, with the ball travelling somewhat faster. Should you destroy the second wall, another one appears - and that is as much as I'll tell you, though it takes many games to obtain the required level of competence to get that far, and there are a definite number of walls, so it is possible to win!

When I first received a copy of the game, it would not run at all. It immediately bombed, and the computer returned to the title screen. There was a considerable degree of puzzlement over this, as it worked fine for Doug - and then we realized that I had the Mark I version of XBASIC. Could this be the problem? We were right. As some of my relatives say when meeting such a problem :"Fix it - with the chequebook." A new XBASIC module allowed the game to proceed.

After a considerable time I mastered it, but found that after the second screen, there was nothing, no congratulations, the ball just kept bouncing around an empty screen. Further, there was no title screen, the game simply started as soon as it loaded. Doug seemed puzzled again at my vitriolic comments about lousy presentation, when again the penny dropped - I had received an unimproved version. I am pleased to say the version for sale does have a title screen, there are more screens than two, and after you exhaust the supply of balls, you have the option of playing again.

The improved version also displays current- and high- score, and the balls remaining are shown at the base of the screen. Your stock of balls increases by two each time a wall is cleared from the screen.

Like all games, there is a technique which permits one to achieve the desired result quicker and easier. If you can penetrate the wall, the ball will then bounce between the back of the wall and the right hand side of the screen, destroying bricks as it goes, with the player having to do very little but watch, and be waiting for the ball to come back to his side of the wall again.

This sounds easy, but it is hard to concentrate your efforts on one area of the wall - that is, to tunnel through. There is a quicker way, but it does involve fine judgement, and is risky. If the ball hits the very edge of the bat, it will come off at a very acute angle, and if it enters a tunnel in the wall you have already created, and if the angle is right, the ball will "burrow" its way right through the wall. All well and good, but there are a few

"ifs" involved, not the least of which is actually hitting the very edge of the bat, and not missing altogether. The other problem with this is that if the ball comes off the bat at an acute angle, it will usually rebound at an acute angle, needing some pretty good judgement to prevent missing it on its return.

There are a lot of good things about this program. The colours are well-chosen, the game is fairly fast, and response of the bat to key press is instantaneous; so much so that one tends to lose a few balls simply because you don't believe it is possible to move the bat fast enough.

Also, the ball behaves the way it should, in real life (mostly, anyhow.) If it hits the edge of the bat or a brick, it will come off at an acute angle. I think, on occasions, it also speeds up, but perhaps that's only an optical illusion.

Be warned! This game can take a long time to play, so make sure the kids are out of the way, and the wife is having a snooze before you start. The brick wall is fairly thick, and so, it does take a long time (5 minutes) to clear away all the bricks. As soon as the last brick disappears, the next screen starts immediately. In other words, there is no respite. It can be exhausting, but if you want a break, press "P" and the game halts until you hit the space bar.

One gripe is that sometimes the ball hits the middle of the bat at an angle, but returns along its entry path, contrary to the laws of Newton. Perhaps this is deliberate, to add an element of unpredictability. Also, very, very occasionally, the ball may be hit in such a way that it runs along the very top or very bottom border. Once it is on this track, it cannot be removed from it except by deliberately missing it. It does make it easy to penetrate the wall, however.

In all, though, I like the game. As a child, I passed many a pleasant hour hitting a tennis ball against a brick wall, or throwing a golf ball against a wall, and attempting to catch it. (Is there something a psychologist would make of this? Something to do with precision, logic, that leads such people to like home computing?)

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Maths Practice Program

By B. Rutherford

When my youngest son started to bring home from school half a page of sums, for homework in the form:-

```
 37                    49
 53+       or          23-   ;
```

I thought here is an idea for a programme to help him learn his elementary arithmetic prompts, reminding of the need to CARRY, or BORROW and then CARRY if necessary. This also reminded him that he was doing the units first, then the tens, and lastly putting in any hundreds. I believed the idea was a good one, but son being smarter than father, progressed past this stage of his maths before I could get the programme written and running. Still all was not lost and I won a TISHUG monthly software award with the first version. This is the second version and has speech as an added attraction.

There is no need to worry if you do not have a speech synthesizer, as the programme checks to see if one is plugged in at line 260, with the statement CALL PEEK(-28672,SS). The programme runs a little faster at the beginning, without the speech synthesizer as it jumps over lines 265-280, which sets up the number array for the sub-programme NUMSP. I have put the conditional IF SS=0 THEN, in the SPEAK and NUMSP sub-programmes, as it saves having to check this before each speech part of the programme, and does not seem to slow the programme execution.

The user also has the option of jumping the instructions, when they know how to use the programme. As the instructions give all the necessary information I will not repeat them here. Lines 500-520 set up the screen display, with the main loop starting at 530 and going to 850. Because addition and subtraction are together in the same loop (for memory conservation), the number of conditionals needed tends to make the whole loop quite messy. Still it seems to work reasonably well.

From 860 to the start of the sub-programmes is the end section, where a different response is given for the number of problems answered correctly. The 'Star Wars' music that is played when more are answered right than wrong using the string variable M$ to set the duration and frequency. This is not the best way of programming music as there is too many approxiamations of notes and durations, but it does not use a lot of memory.

Next we have sub-programmes, where their names are all the description needed, but the CALL SPGET's in NUMSP do tend to slow things down a little, although they improve the way the numbers are spoken.

Finally if you find the speech slows the progamme to much for you or your child, you can leave out the CALL PEEK or add SS=0 to the end of line 260. Other than that just type it in, and follow the screen prompts as they come up.

```
100 REM ******************
110 REM * maths practice *
120 REM *       by       *
130 REM *Brian Rutherford*
140 REM *  9 Bombala St  *
150 REM *Dudley NSW  2290*
160 REM *  2nd. version  *
170 REM * copyright 1984 *
180 REM *99/4a xb version*
190 REM ******************
200 REM
210 REM
220 DATA 0000000206020207,FF
,00000000000000FF,000000FFFF
,1818181818181818,181818
FFFF181818,0001020488502,FF8
1818181818181FF,000000000F0909
0F
230 CALL CLEAR :: RANDOMIZE
:: CALL MAGNIFY(2):: CALL SC
REEN(3):: T=2^(1/12):: F
OR I=1 TO 14 :: CALL COLOR(I
,2,11):: NEXT I :: CALL PLAY
(1,24,T)
240 FOR I=1 TO 8 :: CALL SPR
ITE(#I,ASC(STR$(INT(RND*10))
),INT(RND*8)+3,92,124,IN
T(RND*-255)+127,INT(RND*-255
)+127)
250 CALL SOUND(-99,110*T^I,1
2-I):: NEXT I :: FOR I=128 T
O 136 :: READ A$ :: CALL
 CHAR(I,A$):: NEXT I
260 OPTION BASE 0 :: DIM B$(
19),NM(2),ANS(3),NN$(2):: DE
F RAN(X)=INT(RND*HH):: C
ALL PEEK(-28672,SS):: IF SS=
0 THEN 290
265 FOR I=0 TO 19 :: READ B$
(I):: NEXT I
270 DATA ZERO,TEEN,TWENTY,TH
IRTY,FORTY,FIFTY,SIXTY,SEVEN
TY,EIGHTY,NINETY
280 DATA TEN,ELEVEN,TWELVE,T
HIRTEEN,FOURTEEN,FIFTEEN,SIX
,SEVEN,EIGHT,NINE
290 DISPLAY AT(8,6):RPT$("*"
,18):"      * maths practice
*":"      *       by
  *":"      *Brian Rutherford
*"
300 DISPLAY AT(12,6):"*   Du
dley 2290  *":"      * copyri
ght 1984 *":"      ";RPT$
("*",18)
330 CALL SPEAK("THIS+IS+YOUR
+#TEXAS INSTRUMENTS#+COMPUTE
R",SS):: CALL PLAY(12,36
,T):: CALL SPEAK("PLEASE+TYP
E+IN+YOUR+NAME",SS)
340 CALL DELSPRITE(ALL):: DI
SPLAY AT(9,1)ERASE ALL BEEP:
"Hello I am your Texas":
 :"instruments computer"
360 DISPLAY AT(13,2):"What i
s your name" :: ACCEPT AT(13
,20)SIZE(8):N$ :: CALL S
PEAK("DO+YOU+NEED+INSTRUCTIO
NS",SS)
400 DISPLAY AT(10,5)ERASE AL
L BEEP:"OK ";N$;" Just press
":"":"     y for instruct
ions":"":"     or n for none"
410 CALL SPEAK("PLEASE+PRESS
+Y+OR+N",SS):: CALL KEYS(K,S
):: IF K=89 THEN CALL IN
ST ELSE IF K<>78 THEN 410
450 DISPLAY AT(10,1)ERASE AL
L BEEP:"press 1 for addition
" :: DISPLAY AT(15,1):"p
ress 2 for subtraction" :: C
ALL CHOICE(2,AS,SS)
460 DISPLAY AT(9,1)ERASE ALL
 BEEP:"press 1 for easy": :"
```

```
press 2 for not so easy"
: :"press 3 for hard" :: CAL
L CHOICE(3,K,SS)
470 IF K=49 THEN HH=10 ELSE
IF K=50 THEN HH=K ELSE HH=10
0
500 CALL CLEAR :: CALL HCHAR
(12,18,129,5):: CALL HCHAR(1
4,18,130,5):: CALL HCHAR
(10,24,131,3)
510 IF AS=49 THEN CALL VCHAR
(9,25,132):: CALL VCHAR(10,2
5,133):: CALL VCHAR(11,2
5,132)
520 DISPLAY AT(3,3):"problem
 number" :: DISPLAY AT(9,1)S
IZE(8):N$ :: DISPLAY AT(
11,1)SIZE(2):"ME" :: RIGHT,W
RONG=0
530 FOR PROB=1 TO 10 :: RAND
OMIZE :: DISPLAY AT(3,18)SIZ
E(3):PROB :: DISPLAY AT(
20,1):"press D to correct an
 error": :"press space bar t
o finish"
540 FOR I=1 TO 2 :: NM(I)=RA
N(X):: NEXT I :: IF AS=50 AN
D NM(1)<NM(2)THEN 540 ::
 IF AS=49 THEN SOL=NM(1)+NM(
2)ELSE SOL=NM(1)-NM(2)
545 R=56 :: SP=1 :: I=0
550 IF AS<>49 THEN 555 :: CA
LL SPEAK("THE+SUM+OF",SS)
555 CALL NUMSP(B$(),NM(),SS,
1)
560 I=I+1 :: NN$(I)=STR$(NM(
I)):: C=136 :: FOR J=1 TO LE
N(NN$(I)):: X=VAL(SEG$(N
N$(I),J,1)):: IF LEN(NN$(I))
=1 THEN C=160
570 CALL SOUND(80,131,10)::
CALL SPRITE(#SP,ASC(STR$(X))
,6,R,C):: C=C+24 :: SP=S
P+1 :: NEXT J :: R=R+16 :: I
F I>1 THEN 600
580 IF AS=49 THEN CALL SPEAK
("AND",SS)ELSE CALL SPEAK("T
AKE+A+WAY",SS)
590 CALL NUMSP(B$(),NM(),SS,
2):: GOTO 560
600 R=R+3 :: SP=5 :: I=1 ::
C=C-24
610 IF AS=50 AND HH>49 AND I
=1 THEN DISPLAY AT(16,9)BEEP
:"press 1 to borrow":"
      press 0 for none" ELSE
 640
620 CALL KEYS(K,S):: CALL HC
HAR(7,20,136):: FOR D=1 TO 1
0 :: NEXT D :: CALL HCHA
R(7,20,32)
630 IF S<1 THEN 620 ELSE IF
K=48 THEN 640 :: IF K<>49 TH
EN 620 :: CALL HCHAR(7,2
0,128)
640 DISPLAY AT(16,1)BEEP:"
               UNITS":" "
650 CALL KEYS(K,S):: IF I=1
AND K=68 THEN 610 :: IF I>2
AND HH<=50 OR I>2 AND AS
=50 OR I>3 THEN 670
660 CALL SPRITE(#10,135,13,R
,C):: FOR D=1 TO 10 :: NEXT
D :: CALL DELSPRITE(#10)
670 IF S<1 THEN 650 ELSE IF
K=68 THEN 680 ELSE 710
680 I=I-1 :: SP=SP-1 :: C=C+
24
690 IF I<1 THEN I=1 :: SP=5
:: C=160
700 GOTO 650
710 IF K<48 OR K>57 THEN 820
720 ANS(I),X=K-48 :: CALL SO
UND(90,880,10):: CALL SPRITE
(#SP,ASC(STR$(X)),5,R,C)
730 IF HH=100 AND AS=49 AND
I>1 THEN DISPLAY AT(16,1)BEE
P:"         HUNDREDS" ::
GOTO 810
740 IF I>1 THEN 810 ELSE IF
AS=49 THEN DISPLAY AT(16,1)B
EEP:"                ANY T
O CARRY"
750 IF AS=50 AND HH>49 THEN
DISPLAY AT(16,1)BEEP:"
   any to pay back"
760 CALL KEYS(K,S):: IF AS=5
0 AND HH=10 THEN 770
765 CALL HCHAR(11,19,136)::
FOR D=1 TO 10 :: NEXT D :: C
ALL HCHAR(11,19,32)
770 IF K=68 THEN 690
780 IF S<1 THEN 760 ELSE IF
K<48 OR K>57 THEN 820
790 IF K=49 THEN CALL HCHAR(
11,19,128)
800 DISPLAY AT(16,1)BEEP:"
            TENS"
810 C=C-24 :: SP=SP+1 :: I=I
+1 :: GOTO 650
820 DISPLAY AT(16,9):RPT$(CH
R$(32),28)
830 IF ANS(1)+10*ANS(2)+100*
ANS(3)=SOL THEN CALL R(RIGHT
,SOL,B$(),SS)ELSE CALL W
(AS,WRONG,SOL,R,B$(),NM(),SS
)
840 ANS(1),ANS(2),ANS(3)=0
850 NEXT PROB
860 CALL CLEAR :: IF RIGHT=W
RONG THEN 950 ELSE IF RIGHT<
WRONG THEN 955
870 M$="2>5K1G1E1A2X5K1G1E1A
2X5K1G1E1G9A2>5K1G1E1A2X5K1G
1E1A2X5K1G1E1G9A"
880 FOR I=1 TO 63 STEP 2 ::
CALL SOUND(VAL(SEG$(M$,I,1))
*200,(ASC(SEG$(M$,I+1,1)
)-36)*10,5):: NEXT I :: CALL
 SPEAK("#YOU WIN#",SS)
890 DISPLAY AT(10,4):"You wi
n ";N$ :: DISPLAY AT(12,4):"
you beat me";RIGHT;"to";
WRONG
900 M$="9:2G1G1E1A2)1)1A1E2A
1:2=185:2G1G1E1A2K7A5:2G1G1E
1A2)1)1A1E2A1:2=185:2G1G
1E1A2K7A"
910 FOR I=1 TO 79 STEP 2 ::
CALL SOUND(VAL(SEG$(M$,I,1))
*200,(ASC(SEG$(M$,I+1,1)
)-36)*10,12):: NEXT I
920 M$="2>5K1G1E1A2X5K1G1E1A
2X5K1G1E1G9A2>5D1G1E1A2X5K1G
1E1A2X5K1G1E1A9>"
930 FOR I=1 TO 63 STEP 2 ::
CALL SOUND(VAL(SEG$(M$,I,1))
*200,(ASC(SEG$(M$,I+1,1)
)-36)*10,6):: NEXT I :: GOTO
 980
950 CALL PLAY(1,24,T):: CALL
 SPEAK("IT+IS+A+DRAW",SS)::
DISPLAY AT(10,4):"It's a
 draw ";N$ :: DISPLAY AT(12,
4):RIGHT;"each" :: GOTO 980
955 CALL SPEAK("#I WIN#",SS)
960 DISPLAY AT(10,4):"I win
";N$ :: DISPLAY AT(12,4):"I
beat you";WRONG;"to";RIG
HT
970 J=1652 :: FOR I=1 TO 24
:: CALL SOUND(200,22000,30,2
2000,30,J,30,-4,8):: J=J
/1.059463094 :: NEXT I
980 DISPLAY AT(22,1):"More p
ractce ";N$;" y/n"
990 CALL KEYS(K,S):: IF K=89
 THEN 450 ELSE IF K<>78 THEN
 990
1000 STOP
4000 SUB KEYS(K,S):: CALL KE
Y(3,K,S):: SUBEND
4500 SUB PLAY(X,Y,T)
4510 FOR I=X TO Y :: CALL SO
UND(100,110*T^I,ABS(26-I)):
 NEXT I
4520 SUBEND
5000 SUB INST
5010 DISPLAY AT(4,1)ERASE AL
L:"Do these sums the same wa
y":"":"you would do them
 on paper.":"":"That is, do
the units and"
5020 DISPLAY AT(10,1):" put
the answer in. Then put":"":
"in the amount that has
to be":"":"carried,even if i
t is a"
5030 DISPLAY AT(16,1):"zero.
 Then do the tens and":"":"p
ut that in. Then any hun
-":"":"dreds."
5040 DISPLAY AT(23,1):"press
 any key to continue"
5050 CALL KEYS(K,S):: IF S=0
 THEN 5050
5060 SUBEND
6000 SUB CHOICE(X,K,SS)
6010 :: CALL SPEAK("YOUR+CHO
ICE",SS)
6020 CALL KEYS(K,S):: IF S<1
 THEN 6020
6030 IF K<49 OR(K)X+48)THEN
6040 ELSE SUBEXIT
6040 CALL SPEAK("UHOH+#TRY A
GAIN#",SS)
6050 DISPLAY AT(23,1):"A num
ber between 1 and";X :: GOTO
 6020
6060 SUBEND
7000 SUB SPEAK(S$,SS):: IF S
S=0 THEN SUBEXIT
7010 CALL SAY(S$)
```

```
7020 SUBEND
8000 SUB NUMSP(B$(),NM(),SS,
I):: DIM NM$(2)
8005 IF SS=0 THEN SUBEXIT
8010 N=NM(I):: M$=STR$(N)::
L=LEN(M$):: IF L<>3 THEN 802
0 :: NM$(0)=SEG$(M$,1,1)
:: NM$(1)=SEG$(M$,2,1):: NM$
(2)=SEG$(M$,3,1)
8015 CALL SPGET(NM$(0),H$)::
 IF NM$(1)="0" AND NM$(2)="0
" THEN CALL SAY(,H$,"HUN
DRED"):: GOTO 8090 :: ELSE 8
030
8020 NM$(1)=SEG$(M$,1,1):: N
M$(2)=SEG$(M$,2,1)
8030 IF L=1 OR NM$(1)="0" TH
EN 8070 ELSE IF NM$(1)="1" T
HEN 8050
8040 N=VAL(NM$(1)):: CALL SP
GET(B$(N),X$):: IF NM$(2)="0
" THEN 8080 ELSE CALL SP
GET(NM$(2),Y$):: GOTO 8060
8050 N=VAL(NM$(1)&NM$(2)):
CALL SPGET(B$(N),X$):: IF N<
=15 THEN 8080 ELSE CALL
SPGET(B$(1),Y$)
8060 IF L=3 THEN CALL SAY(,H
$,"HUNDRED AND",X$,,Y$):: GO
TO 8090 :: ELSE CALL SAY
(,X$,,Y$):: GOTO 8090
8070 IF L=3 THEN CALL SPGET(
NM$(2),X$)ELSE CALL SPGET(NM
$(1),X$)
8080 IF L=3 THEN CALL SAY(,H
$,"HUNDRED AND",X$):: GOTO 8
090 :: ELSE CALL SAY(,X$
)
8090 SUBEND
9000 SUB R(RIGHT,SOL,B$(),SS
)
9010 F=410 :: FOR I=1 TO 6 :
: CALL SOUND(99,420,30,440,3
0,F,10):: F=F*1.5 :: NEX
T I
9020 CALL SPRITE(#10,134,2,9
6,184):: RIGHT=RIGHT+1 :: DI
SPLAY AT(9,9)SIZE(3):RIG
HT
9030 NM(1)=SOL :: CALL SPEAK
("#THAT IS RIGHT",SS):: CALL
 NUMSP(B$(),NM(),SS,1)
9040 DISPLAY AT(22,1):"press
 space bar to CONTINUE"
9050 CALL KEYS(K,S):: IF S<1
 THEN 9050
9060 CALL DELSPRITE(ALL):: C
ALL HCHAR(11,19,32):: CALL H
CHAR(7,20,32):: SUBEND
10000 SUB W(AS,WRONG,SOL,R,B
$(),NM(),SS)
10010 F=1652 :: FOR I=1 TO 6
 :: CALL SOUND(200,22000,30,
22000,30,F,30,-4,10):: F
=F/1.05 :: NEXT I
10015 CALL SPEAK("UHOH",SS)
10020 CALL SPRITE(#10,88,7,9
6,184):: WRONG=WRONG+1 :: DI
SPLAY AT(11,9)SIZE(3):WR
ONG
10030 DISPLAY AT(22,1):"pres
s space bar for ANSWER"
10040 CALL KEYS(K,S):: IF S<
1 THEN 10040
10050 CALL DELSPRITE(#5,#6,#
7,#10):: CALL HCHAR(11,19,32
):: CALL HCHAR(7,20,32):
: CALL SPEAK("THE+ANSWER+IS"
,SS)
10060 SP=5 :: IF LEN(STR$(SO
L))=1 THEN C=160 ELSE IF LEN
(STR$(SOL))=2 THEN C=136
 ELSE C=112
10070 FOR I=1 TO LEN(STR$(SO
L)):: X=VAL(SEG$(STR$(SOL),I
,1))
10080 CALL SPRITE(#SP,ASC(ST
R$(X)),7,R,C):: C=C+24 :: SP
=SP+1 :: NEXT I
10090 IF LEN(STR$(NM(1)))=2
THEN Z1=VAL(SEG$(STR$(NM(1))
,2,1))ELSE Z1=NM(1)
10100 IF LEN(STR$(NM(2)))=2
THEN Z2=VAL(SEG$(STR$(NM(2))
,2,1))ELSE Z2=NM(2)
10110 IF AS=49 AND Z1+Z2>9 T
HEN CALL HCHAR(11,19,128)
10120 IF AS=50 AND Z1<Z2 THE
N CALL HCHAR(11,19,128):: CA
LL HCHAR(7,20,128)
10130 NM(1)=SOL :: CALL NUMS
P(B$(),NM(),SS,1)
10150 DISPLAY AT(22,1):"pres
s space bar to CONTINUE"
10160 CALL KEYS(K,S):: IF S<
1 THEN 10160
10170 CALL DELSPRITE(ALL)::
CALL HCHAR(11,19,32):: CALL
HCHAR(7,20,32):: SUBEND
```

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MENU-MAKA

By Peter Bodey, Canberra

WHAT IS IT?

Apart from distinct troubles in spelling I also have experienced many futile hours in making a menu screen just right.

For the uninitiated a menu screen appears in most programs and generally looks something like this:

PRESS
1. MORE MONEY.
2. LESS TAX.
3. INCREASED HOLIDAYS.
4. ALL OF THE ABOVE.
5. QUIT.

Getting the right screen colour, text colour and exact positioning of text takes a disproportionate amount of time compared to the time to actually write the 'real' part of the program. Reading through an article on tokenized values for Extended Basic commands/statements I realised that it was an easy matter to write a program to write a program.

MENU-MAKA was born out of tedium and the desire to use token values in a genuine program.

The program allows you to place text on the screen and then move all or parts of it to legal screen locations and to select the screen/text colours. When you are happy with your efforts the program required to recreate the screen can be saved in merge format for incorporation into your target program. You can even choose the line numbers used.

THE PROGRAM.

The underlying idea was to keep the user in CONTROL, as such all modes are entered and exited by CTRL(key). The function key is ONLY used to INSert characters, DELete characters, ERASE a line and FNCT (4 or =) to leave the program in disgust.

On running the program the default screen and text colours appear and an 'L' shaped sprite shows up at position (1,1). Whenever the 'L' shaped sprite appears the screen is called the movement screen. All other modes can only be entered from the movement screen. CTRL C (Cancel) will bring you back from most other modes to the movement screen.

Using the arrow keys ESDX only (do not use the FNCT key) you can place the sprite at the desired location, (NOTE: These keys are auto-repeat).

When you have the correct position you are ready to ENTER text so press the ENTER key. The normal flashing cursor appears, enter your text using the DEL, INS and ERASE keys in the normal manner if necessary. When finished the line press ENTER and the 'L' sprite will reappear at the start of the entered text. Again using ESDX you can reposition the sprite and enter more text as above.

Suppose you now wish to move part or all of one line, move the 'L' sprite to the start of the line segment you wish moved and press CTRL R (Relocate). A four headed arrow sprite now appears indicating that you can move (if legal) the segment in any of the four directions using ESDX. If you try to move the text such that a collision would occur then both lots of text move. (As usual CTRL C escapes this mode.)

If you want the entire display moved press CTRL W (Whole screen)
then ESDX as before. (This is a slower routine so allow some time for the screen to be completely updated.) CTRL C - escape again.

CTRL S (Screen) is used to select the required screen colour, pressing any key after CTRL S causes the screen colours to scroll continuously (not auto- repeat). This means that you do not have to remember or look up the colour codes for the various colours. When you have the colour you wish press CTRL C.

CTRL L (Letters) works in the same manner as the screen colour but is used for the text or letter colour.

CTRL T (move Through) is used to move an entire line through another line to swap the order of your menu. (Remember CRTL R moved along with the target line any other lines it encountered.)

CTRL Q (Quit) to leave altogether, select a new screen or as a fail safe, redisplay the screen you just left.

CTRL E (Exit to write program) The program can now be saved using any name you wish. The line numbers to start and increment by are also chosen by you.

CTRL P (Printout) Allows an abbreviated printout of the CTRL keys you can use and their function. It is recommended that you do this whilst still learning to use the program.

CTRL M (Menu) Gives you access to 12k of on screen instructions, if you can remember that much!

Final reminder: Use CTRL C to exit most modes, other modes can only be accessed via the movement screen ('L' sprite).

To get the most out of the program you must experiment, the instructions seem overwhelming at first but are in fact fairly easily mastered. Remember also that the program was designed for fine tuning of a screen not major rearrangements.

NOTES TO INTERESTED PERSONS.

1. The actual MERGE format program is written at lines 340+. I have, against my own worst programming habits, included a few comment lines to allow you to use this as an aid to writing your own program to write a program. As you can see it is almost as tedious as generating the menu in the first place. There is a good opening for someone to write a program to take the drudgery out of writing programs that write programs!

2. In order to cut down on multiple IF THEN logic testing statements I used the familiar ON POS(.....) which presented a problem as I was testing for non-displayable CTRL characters. The easy way around this was to subtract from the key value 60 (decimal) which now moves the keys selected back to have displayable characters (Line 280).

Good luck with the program, I hope it will become a useful Utility for you.

```
80 ! Program  MENU-MAKA
       Extended Basic
90 ! Copyright Softex P/L
Written by Peter Bodey 12/84
100 OPTION BASE 1 :: DIM L$(
24):: A$=RPT$(" ",28):: FOR
I=1 TO 24 :: L$(I)=A$ ::
 NEXT I :: SK=8 :: SC=2
110 CALL CLEAR :: DISPLAY AT
(2,5):RPT$("*",18):: DISPLAY
 AT(3,5):"*
   *" :: DISPLAY AT(4,5):"*
MENU GENERATOR *" :: DISPLAY
 AT(5,5):"*
   *"
120 DISPLAY AT(6,5):RPT$("*"
,18):: DISPLAY AT(11,3):"If
you need instructions" :
: DISPLAY AT(13,2):"press 'C
TRL M' anytime when"
130 DISPLAY AT(15,2):"the 'L
' shaped sprite is on" :: DI
SPLAY AT(17,2):"the scre
en; you will not" :: DISPLAY
 AT(19,2):"lose any data."
140 GOSUB 1590
150 GOTO 170 :: CALL CLEAR :
: CALL CHAR :: CALL DELSPRIT
E :: CALL COLOR :: CALL
SPRITE :: CALL LOCATE :: CAL
L KEY :: CALL MAGNIFY :: CAL
L SCREEN
160 CALL SOUND :: X :: Y ::
K :: S :: I$ :: R :: C :: F$
 :: B :: Z$ :: E :: D ::
 F :: G$ :: !@P-
170 CALL CHAR(136,"030303030
303030303030300000000000000
0000000000000FCFC0000000
000"):: CALL MAGNIFY(3):: CA
LL CLEAR :: Y=1 :: X=9
180 CALL CHAR(140,"000000000
001000000000000000000010380
000828382000038100000000
000"):: CALL SCREEN(8)
190 CALL SPRITE(#1,136,SC,Y,
X)
200 CALL KEY(5,K,S):: IF S=0
 THEN 200 ELSE IF K=13 OR K>
130 THEN 280
210 IF K>96 THEN K=K-32
220 ON POS("ESDX",CHR$(K),1)
+1 GOTO 270,230,240,250,260
230 Y=Y-8 :: X=X :: GOTO 270
240 Y=Y :: X=X-8 :: GOTO 270
250 Y=Y :: X=X+8 :: GOTO 270
260 Y=Y+8 :: X=X
270 GOSUB 1550 :: CALL LOCAT
E(#1,Y,X):: GOTO 200
280 IF K>130 THEN 320
290 GOSUB 1540 :: ACCEPT AT(
R,C)SIZE(-29+C):I$ :: IF LEN
(I$)=28 THEN L$(R)=I$ ::
 GOTO 190
300 IF C=1 THEN L$(R)=I$&RPT
$(" ",28-LEN(I$)):: GOTO 190
310 L$(R)=SEG$(L$(R),1,C-1)&
I$&RPT$(" ",29-C-LEN(I$)):: 
GOTO 190
320 ON POS("GIPQTUVW[X",CHR$
(K-60),1)+1 GOTO 200,330,340
,510,550,1150,1240,1290,
1490,1610,1770
330 GOSUB 1750 :: GOTO 190
340 CALL DELSPRITE(ALL):: CA
LL CLEAR :: DISPLAY AT(8,1):
"MERGE FILE:  DSK1." ::
ACCEPT AT(8,17)SIZE(-12):F$
:: IF ASC(F$)=131 THEN 1580
350 F$="DSK"&F$ :: OPEN #2:F
$,VARIABLE 163 :: DISPLAY AT
(12,3):"NITIAL LINE No.
:  10" : ACCEPT AT(12,22)SIZ
E(-5VALIDATE(DIGIT):X :: IF
X=0 THEN 350
360 DISPLAY AT(16,1):"INCREM
ENT LINES BY:  10" :: ACCEPT
 AT(16,22)VALIDATE(DIGIT
)SIZE(-5):Y :: IF Y=0 THEN 3
60
370 CALL CLEAR :: DISPLAY AT
(12,4):"WORKING......" :: B=
LEN(STR$(SK))
380 Z$=CHR$(157)&CHR$(200)&C
HR$(5)&"CLEAR"&CHR$(130)&CHR
$(157)&CHR$(200)&CHR$(6)
&"SCREEN"&CHR$(183)&CHR$(200
)&CHR$(B)&STR$(SK):: Z$=Z$&C
HR$(182):: GOSUB 500 ::
B=LEN(STR$(SC))
390 !CALL CLEAR::CALL SCREEN
(SK)
400 IF SC=2 THEN 430 ELSE Z$
=CHR$(140)&CHR$(73)&CHR$(190
)&CHR$(200)&CHR$(1)&"0"&
CHR$(177)&CHR$(200)&CHR$(2)&
"12"&CHR$(130)&CHR$(157)
410 Z$=Z$&CHR$(200)&CHR$(5)&
"COLOR"&CHR$(183)&CHR$(73)&C
HR$(179)&CHR$(200)&CHR$(
B)&STR$(SC)&CHR$(179)&CHR$(2
00)&CHR$(1)&"1"&CHR$(182)::
Z$=Z$&CHR$(130)&CHR$(150
)&CHR$(73):: GOSUB 500
420 !FOR I=0 TO 12::CALL COL
OR(I,SC,1)::NEXT I
430 FOR I=1 TO 24 :: C=0 ::
E=29 :: IF L$(I)=A$ THEN 490
440 C=C+1 :: IF SEG$(L$(I),C
,1)=" " THEN 440
450 E=E-1 :: IF SEG$(L$(I),E
,1)=" " THEN 450
460 B=LEN(STR$(I)):: D=LEN(S
TR$(C)):: F=E+1-C :: G$=SEG$
(L$(I),C,E+1-C):: Z$=CHR
$(162)&CHR$(240)&CHR$(183)&C
HR$(200)&CHR$(B)&STR$(I)&CHR
$(179)&CHR$(200)&CHR$(D)
&STR$(C)&CHR$(182)&CHR$(181)
&CHR$(199)
470 Z$=Z$&CHR$(F)&G$ :: GOSU
B 500
480 !DISPLAY AT(I,C):"MESSAG
E" FOR EACH NON BLANK LINE
490 NEXT I :: PRINT #2:CHR$(
255)&CHR$(255):: CLOSE #2 ::
 GOTO 1240
500 PRINT #2:CHR$(INT(X/256)
)&CHR$(X-256*INT(X/256))&Z$&
CHR$(0):: X=X+Y :: RETUR
N
510 CALL DELSPRITE(ALL)
520 CALL KEY(0,K,S):: IF S<1
 THEN 520 ELSE IF K=131 THEN
 190 ELSE SC=SC+1
530 IF SC>16 THEN SC=2
540 FOR I=0 TO 12 :: CALL CO
LOR(I,SC,1):: NEXT I :: GOSU
B 1750 :: GOTO 520
550 CALL CLEAR :: CALL DELSP
RITE(ALL):: DISPLAY AT(1,7):
"*MENU GENERATOR*" :: DI
SPLAY AT(5,5):"1. INSTRUCTIO
```

```
NS."
560 DISPLAY AT(7,3):" 2. SCR
EEN COLOR."
570 DISPLAY AT(9,5):"3. CHAR
ACTER COLOR." :: DISPLAY AT(
11,5):"4. RELOCATE." ::
DISPLAY AT(13,5):"5. CANCEL
MODE." :: DISPLAY AT(15,5):"
6. PRINT INSTRUCTIONS."
580 DISPLAY AT(17,5):"7. SAV
E MENU." :: DISPLAY AT(19,5)
:"8. QUIT MENU." :: DISP
LAY AT(24,4):"YOUR SELECTION
 (1-8)?"
590 CALL KEY(0,K,S):: IF K=1
31 THEN 1580 ELSE IF S<1 OR
K<49 OR K>56 THEN 590
600 ON K-48 GOTO 610,820,850
,890,1020,1060,1110,1240
610 CALL CLEAR :: DISPLAY AT
(1,6):"- INSTRUCTIONS -" ::
DISPLAY AT(3,1):"The pur
pose of this program" :: DIS
PLAY AT(5,1):"is to allow yo
u to make up a"
620 DISPLAY AT(7,1):"screen
such as this, select" :: DIS
PLAY AT(9,1):"your color
s for both screen" :: DISPLA
Y AT(11,1):"and character se
ts move data"
630 DISPLAY AT(13,1):"around
 the screen until you" :: DI
SPLAY AT(15,1):"are happ
y with it and then" :: DISPL
AY AT(17,1):"obtain the exte
nded basic"
640 DISPLAY AT(19,1):"code i
n MERGE format to be" :: DIS
PLAY AT(21,1):"merged in
to your program." :: GOSUB 1
590 :: IF K=131 THEN 1580 EL
SE CALL CLEAR
650 DISPLAY AT(1,1):"The pro
gram allows for the" :: DISP
LAY AT(3,1):"full 28 cha
racters per line" :: DISPLAY
 AT(5,1):"and so requires on
e full"
660 DISPLAY AT(7,1):"line fo
r each DISPLAY AT" :: DISPLA
Y AT(9,1):"statement. Fo
r speed of" :: DISPLAY AT(11
,1):"execution you should us
e a"
670 DISPLAY AT(13,1):"shrink
 utility to maximise" :: DIS
PLAY AT(15,1):"your prog
ram. The idea for" :: DISPLA
Y AT(17,1):"this program was
 to speed up"
680 DISPLAY AT(19,1):"time c
onsuming creation of" :: DIS
PLAY AT(21,1):"menus and
 fine positioning." :: GOSUB
 1590 :: IF K=131 THEN 1580
ELSE CALL CLEAR
690 DISPLAY AT(1,1):"The pro
gram has 3 main" :: DISPLAY
AT(3,1):"screens,to esca
pe from most" :: DISPLAY AT(
5,1):"modes press CTRL C."
700 CALL SPRITE(#1,136,SC,49
,9):: DISPLAY AT(7,4):"When
this sprite appears" ::
DISPLAY AT(9,1):"use the arr
ow keys ESDX to" :: DISPLAY
AT(11,1):"place the spri
te in the"
710 DISPLAY AT(13,1):"locati
on you wish to write" :: DIS
PLAY AT(15,1):"part of y
our menu. Press" :: DISPLAY
AT(17,1):"ENTER and commence
 typing."
720 DISPLAY AT(19,1):"DO NOT
 USE THE FUNCTION KEY" :: DI
SPLAY AT(21,1):"ONLY ESD
X TO MOVE." :: GOSUB 1590 ::
 IF K=131 THEN 1580 ELSE CAL
L CLEAR :: CALL DELSPRIT
E(ALL)
730 DISPLAY AT(1,1):"When en
tering your lines the" :: DI
SPLAY AT(3,1):"DEL,INS,E
RASE and FCTN S & D" :: DISP
LAY AT(5,1):"keys can be use
d normally."
740 DISPLAY AT(7,1):CHR$(30)
:: DISPLAY AT(7,4):"This is
called the accept" :: DI
SPLAY AT(9,1):"screen, the f
lashing cursor" :: DISPLAY A
T(11,1):"must be present
 for entry."
750 DISPLAY AT(14,1):"On com
pletion of each entry" :: DI
SPLAY AT(16,1):"press EN
TER and the movement" :: DIS
PLAY AT(18,1):"sprite will r
eappear for you"
760 DISPLAY AT(20,1):"to pos
ition with the ESDX" :: DISP
LAY AT(22,1):"keys as be
fore." :: GOSUB 1590 :: IF K
=131 THEN 1580 ELSE CALL CLE
AR
770 DISPLAY AT(1,1):"The fin
al screen is called" :: DISP
LAY AT(3,1):"the relocat
e screen and the"
780 DISPLAY AT(5,1):"sprite
    will appear at" :: CALL
SPRITE(#1,140,SC,33,73):
: DISPLAY AT(7,1):"the posit
ion of the movement"
790 DISPLAY AT(9,1):"cursor,
 the line can now be" :: DIS
PLAY AT(11,1):"moved wit
h the ESDX keys to" :: DISPL
AY AT(13,1):"the required po
sition."
800 DISPLAY AT(15,1):"Use th
e main menu for more" :: DIS
PLAY AT(17,1):"informati
on. This can be" :: DISPLAY
AT(19,1):"called up from the
 MOVEMENT"
810 DISPLAY AT(21,1):"screen
 by CTRL M." :: GOSUB 1590 :
: IF K=131 THEN 1580 ELS
E 550
820 CALL CLEAR :: DISPLAY AT
(1,6):"# SCREEN COLOR #" ::
DISPLAY AT(4,1):"To alte
r the screen color" :: DISPL
AY AT(6,1):"press CTRL S fro
m the" :: DISPLAY AT(8,1
):"movement screen only. All
"
830 DISPLAY AT(10,1):"sprite
s will then disappear" :: DI
SPLAY AT(12,1):"and pres
sing any key will" :: DISPLA
Y AT(14,1):"scroll through t
he colors"
840 DISPLAY AT(16,1):"contin
uously. To stop at the" :: D
ISPLAY AT(18,1):"selecte
d color press CTRL C." :: GO
SUB 1590 :: IF K=131 THEN 15
80 ELSE 550
850 CALL CLEAR :: DISPLAY AT
(1,5):"# CHARACTER COLOR #"
:: DISPLAY AT(3,1):"To a
lter the character set" :: D
ISPLAY AT(5,1):"press CTRL L
 (for Letters)"
860 DISPLAY AT(7,1):"from th
e movement screen." :: DISPL
AY AT(9,1):"Pressing any
 key will cause" :: DISPLAY
AT(11,1):"the character set'
s color to"
870 DISPLAY AT(13,1):"change
 in order. Allow time" :: DI
SPLAY AT(15,1):"for each
 change. Once you" :: DISPLA
Y AT(17,1):"are happy with t
he color"
880 DISPLAY AT(19,1):"press
CTRL C to return to" :: DISP
LAY AT(21,1):"the moveme
nt screen." :: GOSUB 1590 ::
 IF K=131 THEN 1580 ELSE 550
890 CALL CLEAR :: DISPLAY AT
(1,7):"# RELOCATE #" :: DISP
LAY AT(3,1):"Relocate is
 used to move" :: DISPLAY AT
(5,1):"portions or whole lin
es to a"
900 DISPLAY AT(7,1):"new scr
een position with the" :: DI
SPLAY AT(9,1):"keys ESDX
. From the movement" :: DISP
LAY AT(11,1):"screen select
the portion"
910 DISPLAY AT(13,1):"start
character you wish to" :: DI
SPLAY AT(15,1):"move by
positioning the" :: DISPLAY
AT(17,1):"movement cursor. P
ress"
920 DISPLAY AT(19,1):"CTRL R
 then move as desired." :: D
ISPLAY AT(21,1):"CTRL C
will escape this mode" :: GO
SUB 1590 :: IF K=131 THEN 15
80 ELSE CALL CLEAR
930 DISPLAY AT(1,1):"# WHOLE
 SCREEN RELOCATE #"
940 DISPLAY AT(4,1):"The who
le screen can be" :: DISPLAY
```

```
 AT(6,1):"moved in 4 dir
ections using" :: DISPLAY AT
(8,1):"ESDX keys after press
ing" :: DISPLAY AT(10,1)
:"CTRL W (Whole screen)."
950 DISPLAY AT(12,1):"This w
ill occur only if no" :: DIS
PLAY AT(14,1):"part of t
he menu would be" :: DISPLAY
 AT(16,1):"lost in the shift
." :: DISPLAY AT(18,1):"
NOTE: This routine takes"
960 DISPLAY AT(20,1):"some t
ime, be patient." :: GOSUB 1
590 :: IF K=131 THEN 190
 ELSE CALL CLEAR
970 DISPLAY AT(1,1):"# WHOLE
 LINE MOVE THROUGH #"
980 DISPLAY AT(3,1):"The ord
er of lines in your" :: DISP
LAY AT(5,1):"menu can be
 changed by" :: DISPLAY AT(7
,1):"placing the movement cu
rsor"
990 DISPLAY AT(9,1):"on the
line you require and" :: DIS
PLAY AT(11,1):"pressing
CTRL T (Through)." :: DISPLA
Y AT(13,1):"Now by pressing
E or X you"
1000 DISPLAY AT(15,1):"may m
ove the line through" :: DIS
PLAY AT(17,1):"other lin
es to a clear line," :: DISP
LAY AT(19,1):"if one exists.
 No data will"
1010 DISPLAY AT(21,1):"be lo
st in this mode." :: GOSUB 1
590 :: IF K=131 THEN 190
 ELSE 550
1020 CALL CLEAR :: DISPLAY A
T(1,7):"# CANCEL MODE #" ::
DISPLAY AT(3,1):"Pressin
g CTRL C from most" :: DISPL
AY AT(5,1):"modes will retur
n you to the"
1030 DISPLAY AT(7,1):"moveme
nt screen from which" :: DIS
PLAY AT(9,1):"all other
screens/modes are" :: DISPLA
Y AT(11,1):"selected. If you
 get into"
1040 DISPLAY AT(13,1):"strif
e try CTRL C then press" ::
DISPLAY AT(15,1):"CTRL M
 to give you the menu" :: DI
SPLAY AT(17,1):"screen for h
elp. This will"
1050 DISPLAY AT(19,1):"not c
ause loss of data." :: DISPL
AY AT(21,8):"EXPERIMENT!
" :: GOSUB 1590 :: IF K=131
THEN 1580 ELSE 550
1060 CALL CLEAR :: DISPLAY A
T(1,3):"# PRINT INSTRUCTIONS
 #" :: DISPLAY AT(4,1):"
As a handy guide to memory"
:: DISPLAY AT(6,1):"the list
 of control keys"
1070 DISPLAY AT(8,1):"you ma
y use can be printed"
1080 DISPLAY AT(10,1):"out b
y pressing CTRL P from" :: D
ISPLAY AT(12,1):"the mov
ement screen or by" :: DISPL
AY AT(14,1):"pressing CTRL P
 now. This"
1090 DISPLAY AT(16,1):"will
give an abbreviated set" ::
DISPLAY AT(18,1):"only.
The full menu may be"
1100 DISPLAY AT(20,1):"neede
d for details." :: GOSUB 159
0 :: IF K=131 THEN 1580
ELSE IF K=144 THEN 1150 ELSE
 CALL CLEAR :: GOTO 550
1110 CALL CLEAR :: DISPLAY A
T(1,8):"# SAVE MENU #" :: DI
SPLAY AT(3,1):"When you
are satisfied with" :: DISPL
AY AT(5,1):"the screen conte
nts, color"
1120 DISPLAY AT(7,1):"and ch
aracter colors press" :: DIS
PLAY AT(9,1):"CTRL E (Ex
it preparation)" :: DISPLAY
AT(11,1):"enter the file nam
e and line"
1130 DISPLAY AT(13,1):"numbe
rs you require. Your" :: DIS
PLAY AT(15,1):"screen wi
ll now be saved in" :: DISPL
AY AT(17,1):"MERGE format fo
r later use."
1140 DISPLAY AT(19,1):"You m
ay then create a new" :: DIS
PLAY AT(21,1):"screen or
 change the old." :: GOSUB 1
590 :: IF K=131 THEN 1580 EL
SE 550
1150 CALL DELSPRITE(ALL):: C
ALL CLEAR :: DISPLAY AT(12,1
):"PRINTER: PIO" :: ACCE
PT AT(12,10)SIZE(-7):F$ :: I
F ASC(F$)=131 THEN GOSUB 175
0 :: GOTO 190
1160 OPEN #3:F$,OUTPUT :: PR
INT #3:TAB(27);"MENU GENERAT
OR MEMORY AID.": : : ::
PRINT #3:"FOR ALL MOVEMENT O
F SPRITES ON THE SCREEN DO N
OT USE THE FUNCTION KEYS
,"
1170 PRINT #3:"ONLY THE ESDX
 KEYS ARE NECESSARY.": : : :
 :: PRINT #3:"CONTROL
KEY";TAB(20);"FUNCTION": : :
 :: PRINT #3:TAB(5);"C";TAB(
20);"RETURNS TO MOVEMENT
 SCREEN.": :
1180 PRINT #3:TAB(5);"E";TAB
(20);"WRITES SCREEN DETAILS
TO DISK IN MERGE FORMAT.
": : :: PRINT #3:TAB(5);"L";
TAB(20);"ALLOWS YOU TO CHANG
E THE CHARACTER SET COLO
RS.": :
1190 PRINT #3:TAB(5);"M";TAB
(20);"DISPLAYS MENU OF INSTR
UCTIONS.": : :: PRINT #3
:TAB(5);"P";TAB(20);"GIVES T
HIS ABBREVIATED PRINTOUT.":
:
1200 PRINT #3:TAB(5);"Q";TAB
(20);"GIVES THE OPTION TO QU
IT OR START A NEW SCREEN
.": :
1210 PRINT #3:TAB(5);"R";TAB
(20);"ALLOWS YOU TO MOVE POR
TIONS OF LINES OR WHOLE
LINES.": : :: PRINT #3:TAB(5
);"S";TAB(20);"ALLOWS SCREEN
 COLOR TO BE ALTERED.":
:
1220 PRINT #3:TAB(5);"T";TAB
(20);"MOVE TO A NEW POSITION
 THROUGH OTHER LINE(S)."
: :
1230 PRINT #3:TAB(5);"W";TAB
(20);"ALLOWS YOU TO MOVE WHO
LE OF SCREEN IF POSSIBLE
.": : :: CLOSE #3 :: GOTO 55
0
1240 CALL CLEAR :: CALL DELS
PRITE(ALL):: DISPLAY AT(7,7)
:"1. SAME SCREEN." :: DI
SPLAY AT(10,7):"2. NEW SCREE
N." :: DISPLAY AT(13,7):"3.
EXIT." :: DISPLAY AT(19,
6):"YOUR CHOICE (1-3)?"
1250 CALL KEY(0,K,S):: IF S<
1 THEN 1250
1260 ON POS("123",CHR$(K),1)
+1 GOTO 1250,1580,1270,1280
1270 CALL CLEAR :: CALL SCRE
EN(8):: FOR I=1 TO 12 :: CAL
L COLOR(I,2,1):: NEXT I
:: DISPLAY AT(12,7):"STANDBY
....." :: RUN
1280 CALL DELSPRITE(ALL):: C
ALL CLEAR :: END
1290 GOSUB 1540 :: CALL SPRI
TE(#2,140,SC,Y,X)
1300 CALL KEY(0,K,S):: IF S=
0 THEN 1300 ELSE IF K=131 TH
EN CALL DELSPRITE(ALL)::
 GOTO 190
1310 IF K>96 THEN K=K-32
1320 ON POS("EDSX",CHR$(K),1
)+1 GOTO 1300,1330,1380,1410
,1440
1330 IF R=1 THEN GOSUB 1760
:: GOTO 1300 ELSE I=R-1
1340 IF SEG$(L$(I),C,29-C)=R
PT$(" ",29-C)THEN 1350 ELSE
I=I-1 :: IF I=0 THEN GOS
UB 1760 :: GOTO 1300 ELSE 13
40
1350 IF C=1 THEN 1370
1360 FOR I=I TO R-1 :: L$(I)
=SEG$(L$(I),1,C-1)&SEG$(L$(I
+1),C,29-C):: DISPLAY AT
(I,1):L$(I):: NEXT I :: L$(R
)=SEG$(L$(R),1,C-1)&RPT$(" "
,29-C):: DISPLAY AT(R,1)
:L$(R):: Y=Y-8 :: GOSUB 1550
 :: GOTO 1290
1370 FOR I=I TO R-1 :: L$(I)
=L$(I+1):: DISPLAY AT(I,1):L
$(I):: NEXT I :: L$(I)=A
$ :: DISPLAY AT(I,1):L$(I)::
 Y=Y-8 :: GOSUB 1550 :: GOTO
 1290
```

```
1380 IF C=28 OR SEG$(L$(R),2
8,1)<>" " THEN GOSUB 1760 ::
 GOTO 1300 ELSE IF C=1 T
HEN 1400
1390 L$(R)=SEG$(L$(R),1,C-1)
&" "&SEG$(L$(R),C,28-C):: DI
SPLAY AT(R,1):L$(R):: X=
X+8 :: GOSUB 1550 :: GOTO 12
90
1400 L$(R)=" "&SEG$(L$(R),1,
27):: DISPLAY AT(R,1):L$(R):
: X=X+8 :: GOSUB 1550 ::
 GOTO 1290
1410 IF C=1 THEN GOSUB 1760
:: GOTO 1300 ELSE IF C=2 THE
N 1430 ELSE IF SEG$(L$(R
),C-1,1)<>" " THEN GOSUB 176
0 :: GOTO 1300
1420 L$(R)=SEG$(L$(R),1,C-2)
&SEG$(L$(R),C,29-C)&" " :: D
ISPLAY AT(R,1):L$(R):: X
=X-8 :: GOSUB 1550 :: GOTO 1
290
1430 L$(R)=SEG$(L$(R),2,27)&
" " :: DISPLAY AT(R,1):L$(R)
:: X=X-8 :: GOSUB 1550 :
: GOTO 1290
1440 IF R=24 THEN GOSUB 1760
 :: GOTO 1300 ELSE I=R+1
1450 IF SEG$(L$(I),C,29-C)=R
PT$(" ",29-C)THEN 1460 ELSE
I=I+1 :: IF I=25 THEN GO
SUB 1760 :: GOTO 1300 ELSE 1
450
1460 IF C=1 THEN 1480
1470 FOR I=I TO R+1 STEP -1
:: L$(I)=SEG$(L$(I),1,C-1)&S
EG$(L$(I-1),C,29-C):: DI
SPLAY AT(I,1):L$(I):: NEXT I
 :: L$(R)=SEG$(L$(R),1,C-1)&
RPT$(" ",29-C):: DISPLAY
 AT(R,1):L$(R):: Y=Y+8 :: GO
SUB 1550 :: GOTO 1290
1480 FOR I=I TO R+1 STEP -1
:: L$(I)=L$(I-1):: DISPLAY A
T(I,1):L$(I):: NEXT I ::
 L$(R)=A$ :: DISPLAY AT(R,1)
:L$(R):: Y=Y+8 :: GOSUB 1550
 :: GOTO 1290
1490 CALL DELSPRITE(ALL)
1500 CALL SCREEN(SK)
1510 CALL KEY(0,K,S):: IF S<
1 THEN 1510 ELSE IF K=131 TH
EN 190 ELSE SK=SK+1
1520 IF SK>15 THEN SK=1
1530 GOTO 1500
1540 CALL DELSPRITE(ALL):: R
=INT((Y+14)/8):: C=INT((X-1)
/8):: RETURN
1550 IF Y<1 THEN Y=1 :: GOSU
B 1760 ELSE IF Y>185 THEN Y=
185 :: GOSUB 1760
1560 IF X<9 THEN X=9 :: GOSU
B 1760 ELSE IF X>225 THEN X=
225 :: GOSUB 1760
1570 RETURN
1580 GOSUB 1750 :: GOTO 190
1590 DISPLAY AT(24,1):"*PRES
S ANY KEY TO CONTINUE*"
1600 CALL KEY(0,K,S):: IF S<
1 THEN 1600 ELSE RETURN
1610 CALL DELSPRITE(ALL)
1620 CALL KEY(0,K,S):: IF S=
0 THEN 1620 ELSE IF K=131 TH
EN 190
1630 IF K>96 THEN K=K-32
1640 GOSUB 1880 :: ON POS("E
SXD",CHR$(K),1)+1 GOTO 1620,
1650,1670,1700,1720
1650 IF L$(1)=A$ THEN 1660 E
LSE GOSUB 1760 :: GOTO 1620
1660 FOR I=1 TO 23 :: L$(I)=
L$(I+1):: NEXT I :: L$(24)=A
$ :: GOSUB 1750 :: GOTO
1610
1670 FOR I=1 TO 24 :: IF SEG
$(L$(I),1,1)<>" " THEN GOSUB
 1760 :: GOTO 1620
1680 NEXT I
1690 FOR I=1 TO 24 :: L$(I)=
SEG$(L$(I),2,27)&" " :: NEXT
 I :: GOSUB 1750 :: GOTO
 1610
1700 IF L$(24)=A$ THEN 1710
ELSE GOSUB 1760 :: GOTO 1620
1710 FOR I=24 TO 2 STEP -1 :
: L$(I)=L$(I-1):: NEXT I ::
L$(1)=A$ :: GOSUB 1750 :
: GOTO 1610
1720 FOR I=1 TO 24 :: IF SEG
$(L$(I),28,1)<>" " THEN GOSU
B 1760 :: GOTO 1620
1730 NEXT I
1740 FOR I=1 TO 24 :: L$(I)=
" "&SEG$(L$(I),1,27):: NEXT
I :: GOSUB 1750 :: GOTO
1610
1750 X=9 :: Y=1 :: FOR I=1 T
O 24 :: DISPLAY AT(I,1):L$(I
):: NEXT I :: RETURN
1760 CALL SOUND(100,200,0)::
 RETURN
1770 GOSUB 1540
1780 CALL KEY(0,K,S):: IF S=
0 THEN 1780 ELSE IF K=131 TH
EN 190
1790 IF K>96 THEN K=K-32
1800 I=1 :: GOSUB 1880 :: ON
 POS("EX",CHR$(K),1)+1 GOTO
1780,1810,1840
1810 IF R=1 THEN GOSUB 1760
:: GOTO 190
1820 IF L$(R-I)<>A$ THEN 183
0 ELSE L$(R-I)=L$(R):: L$(R)
=A$ :: R=R-I :: GOTO 186
0
1830 I=I+1 :: IF R-I<1 THEN
GOSUB 1760 :: GOTO 190 ELSE
1820
1840 IF R=24 THEN GOSUB 1760
 :: GOTO 190
1850 IF L$(R+I)<>A$ THEN 187
0 ELSE L$(R+I)=L$(R):: L$(R)
=A$ :: R=R+I
1860 GOSUB 1750 :: GOTO 1780
1870 I=I+1 :: IF R+I>24 THEN
 GOSUB 1750 :: GOTO 190 ELSE
 1850
1880 CALL SOUND(-150,2000,0)
:: RETURN
```

Workstations cont. from page 17

The second workstation we are featuring this month is one built by Mr. Bill Knecht of the Houston Users Group, U.S.A.. This is built out of Pine and shows another way of setting up your computer.

We intend to continue this column in future issues, and in passing mention one very inavative system seen where the Expansion Box was mounted facing up at the rear of the computer, with everything mounted onto a luggage carrier.

Assembly Language Disk Cataloguer

By Peter Bodey, Canberra

A PROGRAM OF SORTS.

When the book 'Programs for the TI Home Computer' by Steve Davis was published I raced out to buy a copy. I found the overall standard of the book and the number of useful programs to be very disappointing. One of the apparently better programs was Disklister. While I had very few programs and files on disk this worked well. One day I inadvertently attempted to load more than the allowed 300 program names and an error message ensued with total loss of data. With the error handling features provided in the TI 99/4A XBASIC cartridge this seemed inexcusable. With 10 minutes of disk feeding down the drain I changed the DIM statement to DIM B$(400) and started again. It turned out that I had 302 programs, which didn't cheer me up greatly. Then came even worse news, 45 #!$% minutes to sort them; which is obviously useless. Something had to be done.

I'd been kidding myself for quite a while that the next program I would attempt was an assembly level one; here was a need for much greater speed so no excuse was left to skim past 9900 coding.

The guiding principles were very simple:

1. Speed;
2. No data loss if the available space is exhausted.

To accomplish high speed would require some clever sort such as a Binary Tree Sort or Shell Sort. After spending 3 or 4 fruitless days wishing I could buy RAM/ROM chips for my own brain (there's plenty of space there folks) I gave up and settled on the mundane Bubble Sort. This is extremely simple to code (about 10 minutes) but works at snail pace. Realising that there was a lot of wasted time after a disk is read and the 'little red light' is still on, an attempt was made to complete sorting before the next disk could be inserted. This has the advantage that at any time a printout can be made of a subset of disks if some care is taken in the feeding order. It also appears to make the sort take no time at all. The in use light remains on for 3.8 seconds after reading the final catalog item, yet the DSRLNK is no longer using the 9900 processor, only the disk manager card neon flashes merrily away.

An upper limit of 3.8 seconds for the sort was now set. Naturally I failed. The first attempt had a worst case sort time of 80 seconds (shades of Steve Davis!). A simple look at the sort showed that only Byte comparisons were made, pretty silly for a 16 bit machine. A quick change to Word comparisons dropped the worst case time to 38 seconds; still snail's pace.

I should mention that in the worst case, I loaded a disk with 74 fairly similar names on (ie. many comparisons needed) over and over. When some 518 names were loaded I re-fed the same disk and timed the sort period.

A little thought and I soon realised that the task was not to sort the items merely to merge them.

Eg. File names in memory	New disk file name
APPLE	BANANA
CARROT	ORANGE
TURNIP	POTATO

Note that each list is itself sorted, once BANANA is placed below APPLE then the sort need never look at APPLE or BANANA again etc. this reduces the total number of comparisons to be made. The worst case sort now had dropped to just under 15 seconds. Still too long but enthusiasm and ideas were waning.

The Shell Sort is reputedly many times faster, maybe next time...

In the actual field test, 40 disks were loaded with a total of 620 program/file names, the final list was saved to disk and printed out (PIO only for this program) all in less than 25 minutes. Most of this time was in disk drive feeding and reading. Only for 2 of the disks did the sort take longer than the allowed 3.8 seconds. One disk had the 74 similar names mentioned previously and the other had 30 names. The average disk with about 10 programs was easily handled.

The buffer size is for 625 files only, if you attempt to load more than this an error message is displayed with out leaving the program and the files can still be printed out and/or saved to disk in DIS/VAR 80 format. This format allows it to be loaded into the Editor Assembler or TI Writer's Editors for re-formatting or use of the string search

function when you only remember part of the name.

It can then also be printed out to any other type of printer using the TI Writer device service routines. As the original Disklister was in XBASIC it was only fair to make an XBASIC version of this program too. Both versions run at about the same speed but the Ed/Ass. version loads in 8 seconds where the XBASIC loader takes 46 seconds. In both versions beep/honk sounds are made at the appropriate points to alert the user. The number of program/file names loaded is displayed after each disk is sorted and an on screen display of the sorted items, 20 at a time, is available for review. (This display can also be used in conjunction with the LOAD FROM DISK option for those without a parallel printer.)

The references used in order of usefulness were:

1. Paul Cass (TICHUG) for his invaluable help at many stages and his beep/honk routines.

2. 'Introduction to Assembly Language for the TI Home Computer' by Ralph Molesworth.

3. Mini Memory manual.

4. Editor Assembler manual. Nearly everything is here but often hidden in small comments.

5. The July 1983 edition of '99er Home Computer Magazine' page 16 article 'Never out of Sorts'.

PROGRAM NOTES

SOFTEX has included the Source Code for the Assembly Language version of the Disk Lister program. To type this in you need the full system and a Editor/Assembler Module. For those who haven't the time or patience to type this in, SOFTEX has available a Disk with the above source code, the assembled program and the Extended Basic Loading version (requires 32 K Memory). We would like to thank B. Elsner of W.A. for the DSRLNK program required to run this.

The program Disk can be obtained by sending $10.00 (Postage paid) to Softex P/L., 59 Landstrom Quadrant, Kilsyth. 3137.

A sample print out is included with this article.

```
CHARA1........TIMP
DICT1.........TIMP
DICT2.........TIMP
EDITA1........TIMP
EDITA2........TIMP
FORMA1........TIMP
FORMA2........TIMP
LOAD..........TIMP
MANAGER.......TIMP
MEDICAL.......TIMP
MPBASE........TIMP
MPCHAR........TIMP
MPDATA........TIMP
MPHLP.........TIMP
MPINTR........TIMP
NAVHELP0......TIMP
NAVHELP1......TIMP
NAVREP........TIMP
NAVSET........TIMP
NAVSORT.......TIMP
OVERLAY.......TIMP
SEEDGEN.......TIMP
SETUP.........TIMP
UDICT.........TIMP
UTIL1.........TIMP
UTIL2.........TIMP
```

```
       DEF  L00044
       REF  VMBW,VSBW,VWTR,KSCAN,DSRLNK,VMBR,VSBR
GRMRA  EQU  >9802
GRMWA  EQU  >9C02
GPLWS  EQU  >83E0
L0038  EQU  >8374
L39    EQU  >8375
L00040 EQU  >837C
L0041  BYTE >36
L0042  BYTE >31
L00043 DATA >0000
       EVEN
L00044 LWPI L117
       LI   R0,>2E00
       CLR  R1
L045   MOVB R0,@L00130(R1)
       INC  R1
       CI   R1,15000
       JNE  L045
       LI   R0,>0380
       LI   R1,>FC00
L0046  BLWP @VSBW
       INC  R0
       CI   R0,>038F
       JLE  L0046
       LI   R0,>070C
       BLWP @VWTR
       JMP  L060
L0047  CLR  R0
       CLR  R1
L048   BLWP @VSBW
       INC  R0
       CI   R0,>0300
       JNE  L048
       RT
L049   TEXT '* DISK SORTER *'
L050   TEXT 'PRESS'
L051   TEXT '1. NEXT DISK.'
L052   TEXT '2. SHOW ON SCREEN.'
L053   TEXT '3. PRINT LIST.'
L054   TEXT '4. SAVE TO DISK.'
L055   TEXT '5. LOAD FROM DISK.'
L056   TEXT '6. QUIT.'
L00057 DATA >0008,>0063,>00A8,>0108
```

```
       DATA >0168,>01C8,>0228,>0288
L00058 DATA L049,L050,L051,L052
       DATA L053,L054,L055,L056
L00059 DATA >0F05,>0D12,>0E10,>1208
L060   BL   @L0047
       CLR  R3
       CLR  R4
L061   MOV  @L00057(R3),R0
       MOV  @L00058(R3),R1
       MOVB @L00059(R4),R2
       SRL  R2,8
       BLWP @VMBW
       INCT R3
       INC  R4
       CI   R4,8
       JLT  L061
       JMP  L0066
L00062 TEXT '000 FILES LOADED  (625 MAX.)'
       EVEN
L063   DATA >0018
L64    DATA >0064
L065   DATA >000A
L0066  CLR  R1
       MOV  @L00043,R2
       DIV  @L063,R1
       MOV  R1,R2
       CLR  R1
       DIV  @L64,R1
       MOV  R1,R1
       JEQ  L00067
       AI   R1,48
L00067 SLA  R1,8
       MOVB R1,@L00062
       CLR  R1
       DIV  @L065,R1
       MOV  R1,R1
       JEQ  L0069
L68    AI   R1,48
L1     SLA  R1,8
       MOVB R1,@L00062+1
       AI   R2,48
       SLA  R2,8
       MOVB R2,@L00062+2
       LI   R0,>2E2
       LI   R1,L00062
       LI   R2,28
       BLWP @VMBW
       JMP  L070
L0069  LI   R6,>3100
       CB   @L00062,R6
       JLT  L1
       JMP  L68
L070   BLWP @L138
       DATA L0139
       SETO R7
       CLR  R6
       MOVB R6,@L0038
       BLWP @L00116
L0071  BLWP @KSCAN
       CB   R7,@L39
       JEQ  L0071
       CB   @L39,@L0041
       JH   L0071
       CB   @L39,@L0042
       JL   L0071
L00072 DATA L0109,L0111,L0112,L0113,L0114,L115
       CLR  R8
       MOVB @L39,R8
       SRL  R8,8
       AI   R8,-49
       SLA  R8,1
       MOV  @L00072(R8),R9
       BL   @L0047
       BLWP *R9
       JMP  L060
L073   LIMI 2
       LWPI GPLWS
       BLWP @>0000
L074   EQU  >8356
L00075 EQU  >1000
L76    EQU  >F80
L077   BYTE >02
L0078  BYTE >01
L0079  BYTE >03
L0080  BYTE >0A
L081   BYTE >00
L0082  DATA >000D,L00075,>0000,>0000,>0005
       TEXT 'DSK1.'
L083   TEXT 'DISK NAME:'
L084   TEXT 'FILE NAME:'
L085   TEXT 'BUFFER FULL-PRINTOUT SUGGESTED'
L086   TEXT '*PRESS ANY KEY TO CONTINUE*'
L087   TEXT 'SORTING.....'
       EVEN
L00088 MOV  @L00043,@L00144
       LI   R0,L76
       LI   R1,L0082
       LI   R2,18
       BLWP @VMBW
       LI   R6,L76+9
       MOV  R6,@L074
       BLWP @DSRLNK
       DATA 8
       JEQ  L091
       MOVB @L077,R1
       LI   R0,L76
       BLWP @VSBW
       MOV  R6,@L074
       BLWP @DSRLNK
       DATA 8
       JEQ  L091
       LI   R0,>0A4
       LI   R1,L083
       LI   R2,10
       BLWP @VMBW
       LI   R0,L00075+1
       LI   R1,L0129
       LI   R2,10
       BLWP @VMBR
       LI   R0,L00075
       BLWP @VSBR
       CB   R1,@L0080
       JEQ  L090
       SRL  R1,8
       LI   R0,>2000
L0089  MOVB R0,@L0129(R1)
       INC  R1
       CI   R1,>000A
       JEQ  L090
       JMP  L0089
L090   LI   R0,>0AF
       LI   R1,L0129
       LI   R2,10
       BLWP @VMBW
       LI   R0,>184
       LI   R1,L084
       LI   R2,10
       BLWP @VMBW
       JMP  L092
L091   BL   @L00137
       JMP  L101
L092   MOV  R6,@L074
```

```
       BLWP @DSRLNK
       DATA 8
       JEQ  L100
       LI   R0,L00075
       BLWP @VSBR
       MOVB R1,R9
       JEQ  L100
       LI   R0,L00075+1
       LI   R1,L0128
       LI   R2,10
       BLWP @VMBR
       LI   R0,L00075
       BLWP @VSBR
       MOVB R1,@L081
       CB   R1,@L0080
       JEQ  L94
       SRL  R1,8
       LI   R0,>2000
L0093  MOVB R0,@L0128(R1)
       INC  R1
       CI   R1,>000A
       JEQ  L94
       JMP  L0093
L94    LI   R0,>18F
       LI   R1,L0128
       LI   R2,10
       BLWP @VMBW
       MOV  @L00043,R8
       CLR  R1
       MOVB @L081,R7
       SRL  R7,8
L095   MOVB @L0128(R1),@L00130(R8)
       INC  R8
       INC  R1
       C    R1,R7
       JEQ  L0096
       JMP  L095
L0096  MOV  @L00043,R8
       AI   R8,14
       CLR  R1
L0097  MOVB @L0129(R1),@L00130(R8)
       INC  R8
       INC  R1
       CI   R1,10
       JEQ  L98
       JMP  L0097
L98    MOV  R8,@L00043
       CI   R8,14976
       JLE  L092
       BL   @L0047
       LI   R0,>162
       LI   R1,L085
       LI   R2,30
       BLWP @VMBW
       BLWP @L138
       DATA L0140
       BL   @L00132
L100   BL   @L0134
       BL   @L0047
       LI   R0,>16A
       LI   R1,L087
       LI   R2,12
       BLWP @VMBW
       BLWP @L110
L101   RTWP
L00102 MOV  @L00043,@L00043
       JEQ  L00106
       LI   R10,L00130
       MOV  R10,R9
       A    @L00043,R9
L00103 LI   R6,>024
L104   MOV  R6,R0
       MOV  R10,R1
       LI   R2,24
       BLWP @VMBW
       AI   R10,24
       C    R10,R9
       JEQ  L0105
       AI   R6,>020
       CI   R6,>2A4
       JEQ  L0105
       JMP  L104
L0105  BL   @L00132
       C    R10,R9
       JEQ  L00106
       BL   @L0047
       JMP  L00103
L00106 RTWP
L0107  DATA >FF00
L0108  BLWP @KSCAN
       CB   @L39,@L0107
       JNE  L0108
       RTWP
L0109  DATA L0120,L00088
L110   DATA L0121,L0145
L0111  DATA L122,L00102
L0112  DATA L123,L00021
L0113  DATA L124,L0030
L0114  DATA L125,L00009
L115   DATA L00126,L073
L00116 DATA L118,L0108
L117    BSS  >20
L118   BSS  >20
L119   BSS  >20
L0120  BSS  >20
L0121  BSS  >20
L122   BSS  >20
L123   BSS  >20
L124   BSS  >20
L125   BSS  >20
L00126 BSS  >20
L00127 BSS  2
L0128  BSS  10
L0129  BSS  10
L00130 BSS  15000
L0131  BSS  48
L00132 LI   R0,>2E2
       LI   R1,L086
       LI   R2,27
       BLWP @VMBW
       BLWP @L00116
L0133  BLWP @KSCAN
       MOVB @L00040,R0
       JEQ  L0133
       RT
L0134  MOVB @L0078,R1
       LI   R0,L76
       BLWP @VSBW
       MOV  R6,@L074
       BLWP @DSRLNK
       DATA 8
       CLR  R0
       MOVB R0,@L00040
       RT
L00135 TEXT 'DISK ERROR-CHECK DRIVE 1'
L00136 DATA 0
L00137 MOV  R11,@L00136
       BL   @L0047
       LI   R0,>163
       LI   R1,L00135
       LI   R2,24
       BLWP @VMBW
```

```
        BLWP @L138
        DATA L0140
        BL   @L00132
        MOV  @L00136,R11
        RT
L138    DATA L119,L141
L0139   DATA >0380,>0791,>0801,>9F00
L0140   DATA >0380,>2391,>0801,>9F00
L141    MOV  *R14+,R1
        LI   R0,>1000
        LI   R2,8
        BLWP @VMBW
        LIMI 0
        LI   R0,>1000
        MOV  R0,@>83CC
        SOCB @L0078,@>83FD
        MOVB @L0078,@>83CE
        LIMI 2
L0142   MOVB @>83CE,@>83CE
        JNE  L0142
        LIMI 0
        RTWP
L00143  BSS  24
L00144  DATA 0
L0145   MOV  @L00043,R11
        JEQ  L148
        MOV  @L00144,R10
        JEQ  L148
        CLR  R9
L146    C    @L00130(R10),@L00130(R9)
        JLT  L00012
        JEQ  L0010
L0147   AI   R9,24
        C    R9,@L00043
        JLT  L146
L148    RTWP
L0010   CLR  R8
        MOV  R10,R7
        MOV  R9,R6
L0011   INCT R6
        INCT R7
        INCT R8
        CI   R8,24
        JEQ  L00012
        C    @L00130(R7),@L00130(R6)
        JEQ  L0011
        JLT  L00012
        JMP  L0147
L00012  CLR  R8
        MOV  R9,R3
        MOV  R10,R7
L0013   MOV  @L00130(R7),@L00143(R8)
        INCT R7
        INCT R8
        CI   R8,24
        JLT  L0013
        MOV  R10,R7
        MOV  R10,R5
L00014  CLR  R8
        AI   R5,-24
        C    R5,R9
        JLT  L016
L00015  MOV  @L00130(R5),@L00130(R7)
        INCT R5
        INCT R7
        INCT R8
        CI   R8,24
        JLT  L00015
        AI   R7,-48
        AI   R5,-24
        JMP  L00014
L016    CLR  R8
L017    MOV  @L00143(R8),@L00130(R3)
        INCT R3
        INCT R8
        CI   R8,24
        JLT  L017
        AI   R10,24
        C    R10,@L00043
        JEQ  L148
        JMP  L0147
L018    TEXT 'PRINTING TO PIO'
L00019  DATA >0012,L00075,>0000,>0000,>0004
        TEXT 'PIO.'
L0020   DATA >1B40,>0D00
L00021  MOV  @L00043,@L00043
        JEQ  L0025
        BL   @L0047
        LI   R0,>166
        LI   R1,L018
        LI   R2,15
        BLWP @VMBW
        MOVB @GRMRA,@L00127
        NOP
        MOVB @GRMRA,@L00127+1
        DEC  @L00127
        LI   R0,L76
        LI   R1,L00019
        LI   R2,14
        BLWP @VMBW
        LI   R6,L76+9
        MOV  R6,@L074
        BLWP @DSRLNK
        DATA 8
        JEQ  L00027
        LI   R1,>0300
        LI   R0,L76+5
        BLWP @VSBW
        MOVB @L0079,R1
        LI   R0,L76
        BLWP @VSBW
        LI   R0,L00075
        LI   R1,L0020
        LI   R2,3
        BLWP @VMBW
        MOV  R6,@L074
        BLWP @DSRLNK
        DATA 8
        JEQ  L00027
        LI   R0,L76+5
        LI   R1,>1900
        BLWP @VSBW
        LI   R0,L00075+24
        LI   R1,>0D00
        BLWP @VSBW
        LI   R10,L00130
        MOV  R10,R9
        A    @L00043,R9
L0022   LI   R0,L00075
        MOV  R10,R1
        LI   R2,24
        BLWP @VMBW
        MOV  R6,@L074
        BLWP @DSRLNK
        DATA 8
        JEQ  L00027
        AI   R10,24
        C    R10,R9
        JEQ  L0023
        JMP  L0022
L0023   BL   @L0134
L024    MOVB @L00127,@GRMWA
```

```
       NOP
       MOVB @L00127+1,@GRMWA
L0025  RTWP
L00026 TEXT 'PRINTER ERROR-CHECK PIO'
L00027 BL   @L0047
       LI   R0,>143
       LI   R1,L00026
       LI   R2,23
       BLWP @VMBW
       BLWP @L138
       DATA L0140
       BL   @L00132
       JMP  L024
L00028 DATA >0012,L00075,>0000,>0000,>000F
       TEXT 'DSK1.FILE-SORTA'
L029   TEXT 'SAVING AS DSK1.FILE-SORTA'
       EVEN
L0030  MOV  @L00043,@L00043
       JEQ  L0033
       BL   @L0047
       LI   R0,>162
       LI   R1,L029
       LI   R2,25
       BLWP @VMBW
       LI   R0,L76
       LI   R1,L00028
       LI   R2,25
       BLWP @VMBW
       LI   R6,L76+9
       MOV  R6,@L074
       BLWP @DSRLNK
       DATA 8
       JEQ  L0034
       MOVB @L0079,R1
       LI   R0,L76
       BLWP @VSBW
       LI   R1,>0200
       LI   R0,L76+5
       BLWP @VSBW
       LI   R0,L00075
       LI   R1,L00043
       LI   R2,2
       BLWP @VMBW
       MOV  R6,@L074
       BLWP @DSRLNK
       DATA 8
       JEQ  L0034
       LI   R1,>1800
       LI   R0,L76+5
       BLWP @VSBW
       LI   R10,L00130
       MOV  R10,R9
       A    @L00043,R9
L00031 LI   R0,L00075
       MOV  R10,R1
       LI   R2,24
       BLWP @VMBW
       MOV  R6,@L074
       BLWP @DSRLNK
       DATA 8
       JEQ  L0034
       AI   R10,24
       C    R10,R9
       JLT  L00031
L0032  BL   @L0134
L0033  RTWP
L0034  BL   @L00137
       JMP  L0032
L00035 DATA >0014,L00075,>0000,>0000,>000F
       TEXT 'DSK1.FILE-SORTA'
L036   TEXT 'DSK1.FILE-SORTA WILL BE READ.'
L037   TEXT 'READING DSK1.FILE-SORTA'
       EVEN
L00009 BL   @L0047
       LI   R0,>121
       LI   R1,L036
       LI   R2,29
       BLWP @VMBW
       BL   @L00132
       BL   @L0047
       LI   R0,>163
       LI   R1,L037
       LI   R2,23
       BLWP @VMBW
       LI   R0,L76
       LI   R1,L00035
       LI   R2,25
       BLWP @VMBW
       LI   R6,L76+9
       MOV  R6,@L074
       BLWP @DSRLNK
       DATA 8
       JEQ  L0007
       MOVB @L077,R1
       LI   R0,L76
       BLWP @VSBW
       LI   R0,L76+5
       LI   R1,>0300
       BLWP @VSBW
       MOV  R6,@L074
       BLWP @DSRLNK
       DATA 8
       JEQ  L0007
       LI   R0,L00075
       LI   R1,L00043
       LI   R2,2
       BLWP @VMBR
       LI   R0,L76+5
       LI   R1,>1900
       BLWP @VSBW
       CLR  R8
       LI   R10,L00130
       MOV  R10,R9
       A    @L00043,R9
L00008 MOV  R6,@L074
       BLWP @DSRLNK
       DATA 8
       JEQ  L0007
       LI   R0,L00075
       MOV  R10,R1
       LI   R2,24
       BLWP @VMBR
       AI   R10,24
       C    R9,R10
       JEQ  L006
       JMP  L00008
L006   BL   @L0134
       RTWP
L0007  BL   @L00137
       JMP  L006
       END  L00044
```

NOTE:

This program is set up for a 'PIO' Printer only.

Once Print-out is selected the user looses all control of the program until the printing actually commences. After this <FCTN 4> will cause an interrupt and the program will return to the MENU screen.

Around the Groups

Throughout Australia active groups of users have banded together to form part of an international link to spread tips, knowledge, programs and the latest news amongst each other. About 3 years ago Shane Anderson from Sydney began the task of trying to find other users of the TI-99/4. Gradually small groups began across Australia, until today there are in excess of 2000 members, without counting the spouses, children, relations and friends who also have some contact with the groups. If you are not a member of a group, then I strongly advise you to join one NOW as it will be up to the groups to find support and developments in the future with T.I. now out of the home computer market.

In Australia all groups have kept together and shared news amongst themselves, so it is not an advantage to belong to one group in preferance to another, although logically the nearest one to you should be the one you join. All groups have newsletters, program libraries, numerous overseas contacts etc.. However they each operate in different ways according to size, membership and assets. Following below are details, contacts, costs and services provided by the groups. It is our intention to publish meeting dates and news in further issues to keep you informed of the activities. In addition to the Capital City groups there are regional ones springing up across the country, eg. Newcastle, Mt. Gambier, who are affiliated with the larger groups.

Doug Thomas.

TI-99/4 Users Group Melbourne

Co-Ordinator: Doug Thomas.
Address: 59 Landstrom Quadrant, Kilsyth. 3137.
Telephone: (03) 7258178.
Membership Cost: $15.00 per 12 month period.
Tape Membership: $35.00 for 6 C-60 Tapes with 15 to 20 programs on each. Variety of programs on each, collected from local, interstate and overseas sources. Non members can join tape membership only for $40.00. Programs posted to all subscribers at 2 monthly intervals.
Meetings: Held monthly Saturday afternoons at Victoria College, Burwood Rd., Burwood at 2.00 pm..
Next Meeting:. To be advised, February 1985.
Newsletter: Posted bi-monthly, offering news, tips, programs and details of next meetings.
Fees sent to: TI-99/4 Users Group Melbourne, 123 Ashburn Grove, Ashburton. 3147.

T.I.C.H.U.G. (Canberra)

Co-Ordinator: Von Klimpel
Address: P.O. Box 610, Belconnen. A.C.T. 2617.
Telephone: (062) 588486
Membership Costs: $18.00 per year.
Meetings: Held bi-monthly.
Tape Software: $5.00 ea., with 8 to 10 programs on each.
Newsletter: CHUG.A.LUG, produced bi-monthly.
Fees sent to: TICHUG, P.O. Box 610, Belconnen. A.C.T. 2616.

T.I.U.P. (Perth)

Co-Ordinator: Les Twiss.
Address: P.O. Box 246, Mt. Lawley. 6050.
Telephone: (09) 2718642
Membership Costs: $15.00 pa. or $10.00 pa. Newsletter only.
Meetings: Held the third Saturday afternoon each month. Free copies of software is availiable at meetings, on supplying own C-90 tape.
Newsletter: Published bi-monthly giving program listings, tutorials, and in depth reviews.
Fees sent to: TIUP, P.O. Box 246, Mt. Lawley. 6050. W.A.
Very experienced group of programmers who are leading the way with Assembler and other languages.
Bulletin Board operating: Phone No: (09)

A.T.I.C. (Adelaide)

Co-Ordinator: Fred Cugley.
Address: 26 Suffolk Ave., Brahma Lodge. 5109.
Telephone: (08) 2583499.
Membership Cost: $24.00 pa.
Meetings: Held ea. 6/8 weeks at a School, advised in Newsletter
Newsletter: Published bi-monthly and posted.
Program Tapes: Availiable at $6.00 ea. for 10 good programs. The Group is currently going through a transition stage, with the Co-Ordinator and Secretary looking to stand down from their positions.
Fees sent to: ATICC, 26 Suffolk Ave., Brahma Lodge. 5109. S.A.

T.I.U.S.H.U.G. (Sydney)

Co-Ordinator: Peter Varga.
Secretary: John Robinson, P.O. Box 149, Pennant Hills. 2120.
Telephone: (02) 8480956
Membership Cost: $10.00 initial joining fee, $22.00 per 12 month period.
Meetings: Held first Saturday each month (2nd. Sat. if 1st. a holiday weekend) at 2.00 pm. at St. Johns Church Hall, Victoria Street, Darlinghurst. Regional metings held between main meetings on various nights.
Newsletter: Posted monthly, giving news, tips, programs, and future meeting details.
Program Tapes: Sold $3.00 ea. at meetings, $4.00 ea. Posted. Each contain about 10 programs, and are set themes, eg. Extended Basic, Ext. Basic Music, Games, Ord. Basic, Ord. Music, Speech. No subscription service, ordered separately.
Fees sent to: TISHUG, P.O. Box 149, Pennant Hills. 2120.
Features: Program Crisis Line.
Bulletin Board for Modems, commenced 1.07.84. Phone No: (02) 5600926. To register as a user write to: TI.S.H.U.G.BBS, P.O. Box 595, Marrickville. 2204.
Monthly Software Competition with prizes up to $50.00.

TI Tas Users Group (Hobart)

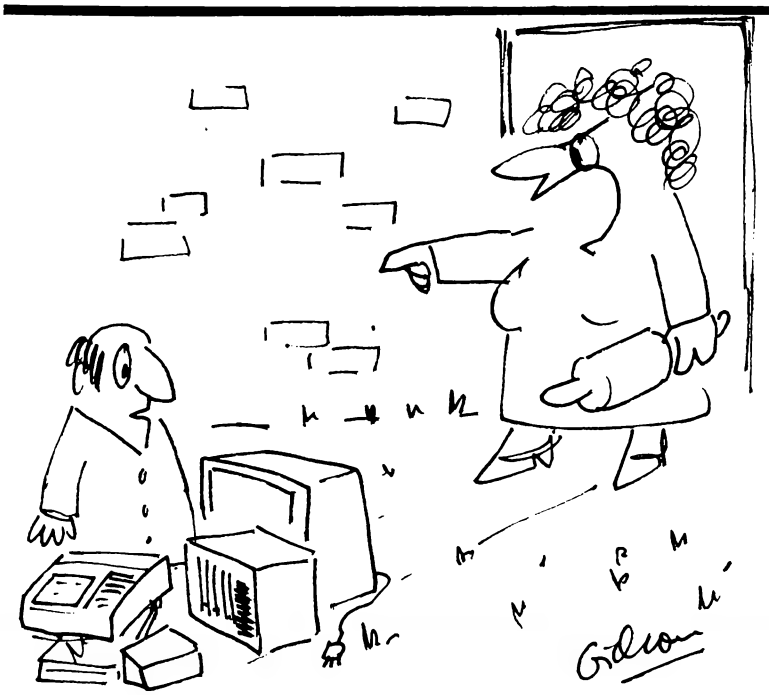
Co-Ordinator: Rex Shephard.
Address: 1 Benboyd Crt., Rokeby. 7019.
Telephone: (002) 476029
(002) 294009.(Leon Lonergan)
Membership Cost: $15.00 per year.
Meetings: Meet every third Sunday of the month at the University of Tasmania from 2pm. to 4pm. in Room 373.
Tape Software: $5.50 a C-60 tape ($9.00 SS/SD Disk) of user written programs.
Newsletter: Bi-monthly.
Fees sent to: T.I. Tas Users Group, 7 Tarana Road, Blackman's Bay. 7152. Tasmania.

T.I.B.U.G. (Brisbane)

Co-Ordinator: Mr. Greg Lane.
Address: P.O. Box 57, Aspley. 4034.
Telephone: (07) 2641562
Membership Cost: $22.00 pa. reducing on a sliding scale from September.
Meetings: Held monthly, check for venue.
Newsletter: Bug-Bytes, published monthly and posted.
Program Tapes: $5.00 ea. plus $1.00 Postage.
Features: Programmers Hot Line.
Operate several sub-groups in area.
Home Computer Magazines is sold at meetings along with other odds and ends.
Running an Assembly language workshop.
Fees sent to: TIBUG, P.O. Box 57, Aspley. 4034. QLD..

National TI-99/4 Users Group of Australia

Co-Ordinator: Doug Thomas, 59 Landstrom Quadrant, Kilsyth. 3137. Vic.
Functions as a co-ordinating role between the various groups throughout Australia. Does not actively organise functions or meetings except between Co-ordinators and other interest parties. Acts as a distribution point for Software and other Data received internationally.



TO ALL OUR READERS,
A MERRY CHRISTMAS
AND A "PEACEFUL",
PROSPEROUS AND
HAPPY NEW YEAR
FROM ALL AT

Softex.

Erata

Important Notes for Readers of "Introduction to Assembly Language for the TI Home Computer" by Ralph Molesworth.

The following errors have been found by Rob Williams, of the Perth Users Group

****

Page 49 Replace VDP RAM ADDRESS DECIMAL=((ROW-1))*(COLUMN-1)
With VDP RAM ADDRESS DECIMAL=((ROW-1))+(COLUMN-1)

Page 67 Replace 11th.line of program C R7,4
With CI R7,4

Page 68 Replace 4th. line of program CI R3,R7
With C R3.R7

Page 74 Replace 16th. line of program BYTE >0F
With BYTE >05
In order to make program branch to main title screen when 'Quit' is pressed.

Page 76 Replace 1st. line of program AORG >7D0C
With AORG >7D30
This is because enough space has not been allocated in the book for the Symbol table. For more information, read page 36 of the book.
Replace 15th. line of program DATA >0F00
With DATA >0500
To make program branch to Main Title Screen when 'Quit' is pressed.
Replace 5th. line up from page bottom BLWP @KS N
With BLWP @KS

Page 89 Replace 13th.line of program JLE CPUT
With JL CPUT
Otherwise 11 records will be written, not 10.

Page 118 Replace 8th. line of program CLR STATUS
With CLR @STATUS

Page 119 Replace 2nd. line up from page bottom LI R0,0755
With LI R0,>0755

Page 121 Insert after line 4 these two lines:
CB @KEYVAL,@ESCV
JEQ ESCAP

Page 122 Replace 10th. line of program 100 FOR LOOP=0 TO 16
With 100 FOR LOOP=0 TO 14

Page 123 Replace 4th. line of Assembly Program SBUFF BSS 256
With SBUF BSS 256

Page 124 Replace 25th. line of program ERROR LI 0,>1300
With ERROR LI R0,>1300
Replace 26th. line of program BLWP @ER R
With BLWP @ERR

Page 127 Delete three words from the 7th. line of text:
"or equal to".

Page 130 Add one new line after line 20, i.e. between characters 90 and 91:
DATA >0000,>0000
Four bytes of zeros must be added here to force correct loading in Pattern Descriptor Table of all characters from 91 to 143

Page 131 Replace 4th. line up from page bottom LI R2,904
With LI R2,912

News Briefs

TI-Writer and Multiplan Prices Rise.

****

Games Modules Prices Fall.

Prices of many games in module form have fallen sharply, both in the U.S. and here. Some modules are as low as $5.00 in the U.S., and under $20.00 here.

****

Softex Goodies

SOFTEX PROGRAMS

SOFTEX now has an exciting Assembly Language game for sale, known as 'Brick-Bat'. In this game you use the 'S' and 'D' keys to reflect a bouncing ball into a brick wall, demolishing it as you go. Very quick reflex action is required to succeed in this game. Available either Cassette based requiring Mini-Memory for $12.00 or on Disk with Extended Basic and 32K memory for $15.00. In the case of the cassette version this program is loaded using the normal 'OLD CS1' routine. Go on, give this a try.

Programs from issues 1 to 3 of SOFTEX Magazine are now available on tape for $12.00 or Disk for $15.00, postage paid. This is the quick way to precure these programs without having to type them in.

Finance Advisor Program is available on Disk only for $12.00 postage paid. This program considers all avenues of loans, repayments, and which type of interest is cheaper, together with a tax program and budget. This program will soon tell you wheather you can afford those extras you want.

DATA BASE MANAGEMENT SYSTEM

This program written in Assembly Language is fast, and allows up to 250 fields with 32000 records (record size limited to 255 bytes). Comes as a Module and Disk, requires 32K memory, Disk Controller and Drive, and a RS232 interface with printer if output is required. Can use TI-WRITER files for reports, allows up to 80 character formatting, using automatic scrolling. Very easy to set up file structure, Reports can be modified easily to display information required. Can be used for Membership and Mailing Labels, Invoicing, Inventory and any of thousands of uses. A must for the serious user of the computer. SOFTEX Price: $105.00, P&P if applicable $5.00.

Cartridge Expander. This lets you switch between 3 modules quickly without causing wear and tear on the Module port of your computer and saves you suffering from the dreadful curse of lock-up (see review issue No. 3). Price: $60.00 plus $3.00 Postage.

Homework Helper. This program is a simple way for a student to make notes of School assignments, coupled with a simple Word Processor. A new model coming out has a spell checker and a 12000 word dictionary. Requires 32K Memory and Disk Drive. Price $60.00 plus $3.00 Postage.

99/4A Auto Spell Check. Comes with a 20,000 word dictionary, can utilize as many user dictionaries required. Excellent Program, comes on 2 Disks. Price $59.95 plus $3.00 postage.

SLIM LINE DISK DRIVES

SOFTEX Special - 4 only available, National DS/DD Disk Drives for sale for $220.00 Bare Drive, $330.00 with External Power Supply and Cable. Postage $10.00.

Chinon DS/DD Disk Drive now only $300.00 Bare Drive, $420.00 with External Power Supply and Cables. Postage $10.00

Also available 1 "pre-loved" External Disk Drive, SS/DD, for $200.00 complete with cabling, a 2 TI SS/DD Disk Drive Cards for $120.00.

Contact SOFTEX for your Disk Drives for your new Corcomp Expansion System, we can supply double power supplies too, contact us for a price.

PRINTERS

AMUST P88/2: Offers Pica/Elite Print, Proportional spacing, near letter quality printing and Standard printing up to 120cps.
Price $490.00 plus $10.00 Postage.

AMUST 80 DT/2: A much more rugged printer than the 80-DT, comes with proportional space printing also. Speed up to 100cps.
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Introduction to Assembly Language for the TI Home Computer Price: $28.00 plus $2.00 Postage.

Programs for the TI Home Computer. Price $24.00 plus $2.00 Postage.

New Australian Disk Manager/Disk Fixer. This program is more than Disk Manager, or Disk Fixer, a real tool for Assembly Language. Price $39.95 plus $1.00 Postage.

mac Graphics 723 2331

SOFTEX SUPPLEMENT

Commencing with this issue of SOFTEX we have included a supplement for advertising our goods, with this being available to other interested advertisers at $50.00 per page.

This has mainly been done in order not to waste valuable space inside the magazine, and allows us to give a fuller description of the products we carry. This will become a regular feature in future editions.

As can be seen SOFTEX intends to support the TI-99/4A with the new CorComp Expansion system at a price well under the forcast price of $745.00. Remember we are 'USER'S' of the TI-99/4A, and not just retailers selling a product. We stand by what we sell, and have developed a personal relationship with our suppliers so that we can provide the best service.

SOFTEX does NOT operate 9am. to 5pm., as its Directors have to work elsewhere during the day to earn a living, and therefore remind you that the telephone number is an after hours one only. We carry a limited stock of products, but can usually arrange to have your order filled within 1 to 2 days unless the wholesaler is out of stock. Our policy is to process orders by return mail if possible.

If you do not see a product you wish to purchase listed in this supplement, don't hesitate to telephone and we will see what we can do for you.

SOFTEX wishes all our Readers and past customers a Very Merry Christmas and a Happy New Year.

Doug, Mary, Wayne and Ian.

SOFTEX P/L
59 Landstrom Quadrant
Kilsyth 3137
Tel: (03) 725 8178 A.H. only.

Item	Cost
P&P:	
Total Aust.:	$

Order by sending cheque or by Bankcard

Name .....

Address .....

BANKCARD/MASTERCARD

Account Number ☐☐☐ ☐☐ ☐☐☐ ☐☐☐☐☐☐

I hereby authorise Softex P/L to charge my

Bankcard/MasterCard Account the sum of $ .....

Expiry date ../../.. Min. Purchase $5.00

Signature .....

SPECIAL

1 ONLY TI-99/4 PRINTER, BARELY USED, COMPLETE WITH CABLE, TRANSFORMER, READY TO RUN, $360.00 PLUS $12.00 POST.

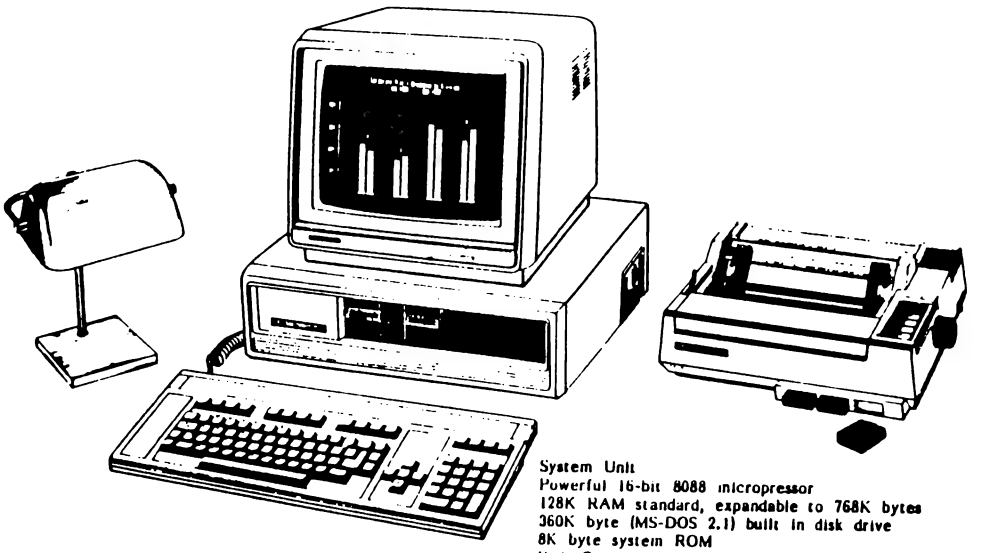
ERRATA.

DUE TO PRINTER DEFAULTS THERE ARE GAPS IN THE PROGRAM THAT SHOULD NOT EXIST AT THE 80TH. CHARACTER FOR:-
MATHS PRACTICE AND
MENU-MAKA.

SEASONS GREETINGS

TI PROFESSIONAL COMPUTER

Why not trade up to a Professional?



ARE YOU CONSIDERING UPGRADING YOUR SYSTEM?

TALK TO SOFTEX ABOUT THE MANY FEATURES OF THE TI-PROFESSIONAL COMPUTER

CONTACT SOFTEX FOR A GREAT CHANGEOVER PRICE

System Unit
Powerful 16-bit 8088 microprocessor
128K RAM standard, expandable to 768K bytes
360K byte (MS-DOS 2.1) built in disk drive
8K byte system ROM
Disk Controller
Keyboard interface
Standard parallel printer port
Monochrome/color CRT controller with 4K bytes of video display memory
Keyboard
IBM Selectric layout
97 keys, including separate numeric keypad, cursor control cluster, 12 special function keys and isolated edit/delete keys
Uppercase indicator light
Display Unit
High resolution (720 x 300 pixels)
13 in. color or 12 in. green monochrome monitor
25 line by 80 column format

TIPC. Standard Configurations

Texas Instruments Professional Computer

ITEM DESCRIPTION	PART NUMBER	REC. RETAIL PRICE
Standard Configurations		$A
PC120M		
System unit 64K,360K Floppy;	2223051-0005	$3,995
64K RAM. Expan. Card;	2223237-0001	
Keyboard;	2230528-0001	
Full High 360K Floppy;	2223042-0002	
12-inch B&W CRT/controller;	2223046-0003	
MS-DOS 2.1	2239873-0001	
PC120C		
System unit 64K,360K Floppy;	2223051-0005	$4,995
64K RAM Expan. Card;	2223237-0001	
Keyboard;	2230528-0001	
Full High 360K Floppy;	2223042-0002	
13-inch Colour CRT/controller;	2223041-0005	
MS-DOS 2.1	2239873-0001	
PC152M		
System unit 64K,360K Floppy;	2223051-0005	$7,275
64K RAM Expan. Card;	2223237-0001	
Keyboard;	2230528-0001	
12-inch B/W CRT/Controller;	2223046-0003	
10M-byte Winchester disk;	2223239-0002	
2x64K Chip Sets;	2223099-0001	
MS-DOS 2.1	2239873-0001	
PC152C		
System unit 64K,360K Floppy;	2223051-0005	$8,275
64K RAM Expan. Card	2223237-0001	
Keyboard;	2230528-0001	
13-inch Colour CRT/Controller;	2223041-0005	
10M-byte Winchester disk;	2223239-0002	
2x64K Chip Sets	2223099-0001	
MS-DOS 2.1	2239873-0001	

TIPPC (Portable)

Texas Instruments Portable Professional Computer

ITEM DESCRIPTION	PART NUMBER	REC. RETAIL PRICE
Standard Configurations		$A
PC220M		
System unit 64K,360K Floppy. Black and White Monitor	2238684-0003	$4,925
64K RAM Expan. Card	2223237-0001	
TPC Keyboard Kit	2238685-0001	
TPC Half-High 360K	2237395-0001	
MS-DOS 2.1	2239873-0001	
PC220C		
System unit 64K,360K Floppy. Colour Monitor	2238684-0004	$6,870
64K RAM Expan. Card	2223237-0001	
TPC Keyboard Kit	2238685-0001	
TPC Half-High 360K	2237395-0001	
MS-DOS 2.1	2239873-0001	
PC252M		
System unit 64K,360K Floppy. Black and White Monitor	2238684-0003	$8,660
64K RAM Expan. Card	2223237-0001	
TPC Keyboard Kit	2238685-0001	
TPC MM 10MB Winchester	2238695-0001	
2x64K Chip Sets	2223099-0001	
MS-DOS 2.1	2239873-0001	
PC252C		
System unit 64K,360K Floppy. Colour Monitor	2238684-0004	$8,785
64K RAM Expan. Card	2223237-0001	
TPC Keyboard Kit	2238685-0001	
TPC MM 10MB Winchester	2238695-0001	
2x64K Chip Sets	2223099-0001	
MS-DOS 2.1	2239873-0001	

SOFTEX SUPPLEMENT

SOFTEX GOODIES

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TI PROFESSIONAL COMPUTER

Texas Instruments have reduced prices substantially and this great system is now available for less than you thought. Contact SOFTEX if you are thinking of up-grading, which could cost around $2000.00 if you have a full system.

Prices range from under $4000.00 for 2 Disk Drives, a monitor, Keyboard and MS-DOS 2.1 to around $8000.00 for a 10M-byte Winchester, Color Monitor, 256K version.

Try SOFTEX for a great Price for your TI Professional.

SOFTEX PROGRAMS

SOFTEX now has an exciting Assembly Language game for sale, known as 'Brick-Bat'. In this game you use the 'S' and 'D' keys to reflect a bouncing ball into a brick wall, demolishing it as you go. Very quick reflex action is required to succeed in this game. Available either Cassette based requiring Mini-Memory for $12.00 or on Disk with Extended Basic and 32K memory for $15.00. In the case of the cassette version this program is loaded using the normal 'OLD CS1' routine. Go on, give this a try.

Programs from issues 1 to 3 of SOFTEX Magazine are now available on tape for $12.00 or Disk for $15.00, postage paid. This is the quick way to precure these programs without having to type them in.

Finance Advisor Program is available on Disk only for $12.00 postage paid. This program considers all avenues of loans, repayments, and which type of interest is cheaper, together with a tax program and budget. This program will soon tell you wheather you can afford those extras you want.

DATA BASE MANAGEMENT SYSTEM

This program written in Assembly Language is fast, and allows up to 250 fields with 32000 records (record size limited to 255 bytes). Comes as a Module and Disk, requires 32K memory, Disk Controller and Drive, and a RS232 interface with printer if output is required. Can use TI-WRITER files for reports, allows up to 80 character formatting, using automatic scrolling. Very easy to set up file structure, Reports can be modified easily to display information required. Can be used for Membership and Mailing Labels, Invoicing, Inventory and any of thousands of uses. A must for the serious user of the computer. SOFTEX Price: $105.00, P&P if applicable $5.00.

Cartridge Expander. This lets you switch between 3 modules quickly without causing wear and tear on the Module port of your computer and saves you suffering from the dreadful curse of lock-up (see review issue No. 3). Price: $60.00 plus $3.00 Postage.

Homework Helper. This program is a simple way for a student to make notes of School assignments, coupled with a simple Word Processor. A new model coming out has a spell checker and a 12000 word dictionary. Requires 32K Memory and Disk Drive. Price $60.00 plus $3.00 Postage.

Astrology (Horoscope Maker). This produces 9 different House system charts (see article in this issue) and calculates the precise location of each planet. Requires Disk and 32K memory. Price $70.00 plus $3.00 Postage.

99/4A Auto Spell Check. Comes with a 20,000 word dictionary, can utilize as many user dictionaries required. Excellent Program, comes on 2 Disks. Price $59.95 plus $3.00 postage.

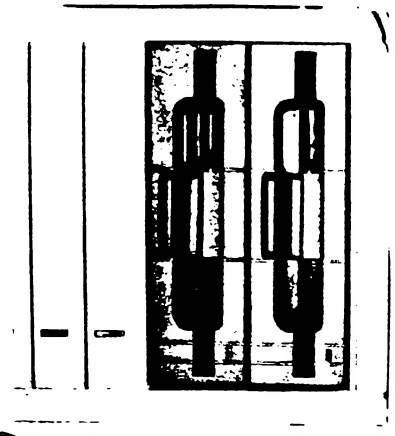
New Australian Disk Manager/Disk Fixer. This program is more than Disk Manager, or Disk Fixer, a real tool for Assembly Language. Price $39.95 plus $1.00 Postage.

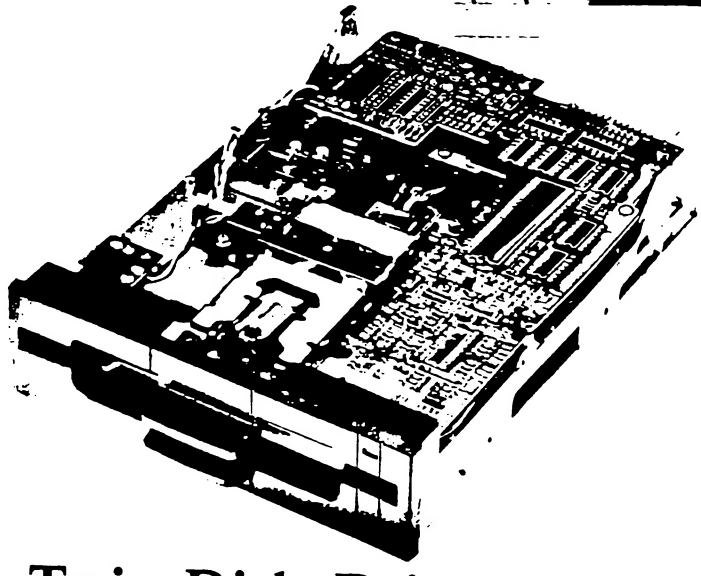
XIDEX DISKS

XIDEX Disks available SS/DD $40.00 plus $2.00 Postage for box of 10 Disks.

SOFTEX SUPPLEMENT

CHINON F-502





Add Twin Disk Drives to your TI Expansion Box

CHINON 5-1/4" FLOPPY DISK DRIVES

KEY FEATURES

- *Pop-Up Mechanism*
- *Half-Height Size*
- *High Speed Data Access*
- *Direct Drive Brushless Spindle Motor*
- *Low Power Consumption*
- *Simple Design*
- *Automatic Power-Down Control*
- *Plug Compatibility*

Chinon DS/DD Disk Drive now only $300.00 Bare Drive, $420.00 with External Power Supply and Cables. Postage $10.00

5-1/4" FLOPPY DISK DRIVES F-502

DESCRIPTION

The CHINON 5-1/4" floppy disk drive F-502 is a double-sided, double-density drive with a storage capacity of 500K bytes, unformatted and is expandable to incorporate up to 4 drives. The CHINON disk drives, although designed for low cost, is also built for high precision, high quality and high durability. All circuits are integrated onto a single circuit board, and the control circuit incorporates a CHINON designed custom LSI IC to control all I/O signals, the head positioning step motor, the spindle motor and the logic circuits, to lower the number of parts allowing for a lower cost design.

■ Pop-up Mechanism

In order to improve operations, the one-touch, "pop-up" mechanism has been incorporated. Loading the disk is done by simply inserting the disk and pinching the open/close lever and will not damage the disk in any way. When unloading the disk, again, by simply pinching the open/close lever, the disk will be ejected with the "pop-up" mechanism making operations simple. Also, if the disk has not been properly inserted, the disk will be pushed back out, preventing improper operations.

■ Low Power Consumption

A low power consumption design has been achieved, while in stand-by, only 2.84W are used, and during operation, only 4.65W are used.

■ Automatic Power-down Control

If no rotation commands are sent to the step motor during a given period of time, the step motor will automatically go into a "power-save" mode.

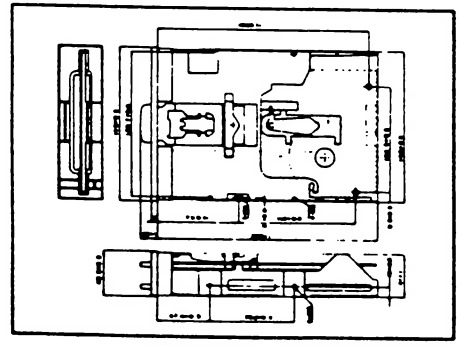
■ Direct Drive Brushless Spindle Motor

A slim, durable, direct drive spindle motor is used and even after continuous use, no maintenance or check procedures are required.

■ Plug Compatibility

Recording format, data transfer rate and disk rotation speed are compatible with standard size 5-1/4" drives.

DIMENSIONS



SPECIFICATIONS

ITEM	CHARACTERISTIC	
	Double Density	Single Density
Storage capacity		
Unformatted per media	500K Byte	250K Byte
per track	6.25K Byte	3.125K Byte
Formatted per media	327.68K Byte	163.84K Byte
per track	4096 Byte	2048 Byte
(Equivalent to IBM format)		
Recording Density	5876 BPI	2938 BPI
Rate of data transfer	250K BPS	125K BPS
Access Time		
Power-on to ready time	1 sec	
Single track seek time	6 msec./track	
Average access time	100 msec.	
Settling time	20 msec.	
Average latency	100 msec.	
Rotational Speed	300 rpm	
Track Density	48 TPI	
Number of Track	80	
Number of Cylinder	40	
Number of Head	2	
Radius of Track Outer	0 side: 57.151mm	1 side: 55.034mm
Inner	36.513mm	34.396mm
Number of Index	1	
Recording Mode	MFM	FM
Power Requirements	DC +12V ± 5% 0.2A Typ. DC+5V ± 5% 0.45A Typ	
Dimensions	146 (W) x 41 (H) x 220 (D) mm	
Weight	Approx. 1.2 kgrams	
Error Rates		
Soft errors	10^{-9} bits	
Hard errors	10^{-12} bits	
Seek errors	10^{-6} seeks	
Ambient Temperature		
Operating	5°C to 45°C	
Transit	0°C to 50°C	
Storage	-20°C to 60°C	
Relative Humidity	(Maximum wet bulb temperature 29°C)	
Operating	20% to 80%	
Transit	5% to 90%	
Storage	8% to 90%	

CHINON INDUSTRIES, INC.

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Specifications are subject to change without notice

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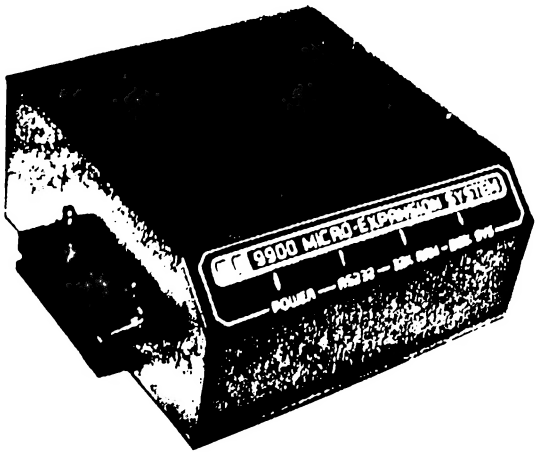
SOFTEX SUPPLEMENT

Corcomp Expansion System



SOFTEX hopes to have the first shipment of the New CorComp 9900 Micro-Expansion System by late January 1985. This will include the RS323, 32K, and Double Density Disk Controller for an expected price of $595.00 plus $11.00 Postage.

This system will require the use of Disk Drives with External Power. Softex suggests that your purchase a Double Slim Line Power Supply and cabling for $180.00 so that you can add the second Drive later. Slim Line Disk Drives range from $220.00 (limited number only) to $300.00 ea.

If you are after a system then place your order now with Softex as they will be scarce for a time.

CorComp Double Density Disk Controllers are available now for $295.00 plus $8.00 Postage.

CONSOLE WRITER

NEW

Turns your console into a word processor without disk-drive memory. With just your console, a printer and this unique cartridge program you can begin word processing today. Features include a full screen text editor that lets you Insert and Delete characters and complete lines. The program is extremely easy to use yet powerful enough to handle most home word processing applications.

This new Word Processor is available for $70.00 plus $3.00 Postage.

SOFTEX SUBSCRIPTION

SOFTEX MAGAZINE CAN ONLY CONTINUE IN PUBLICATION IF WE HAVE AN ASSURED NUMBER OF SUBSCRIBERS.

EARLY RENEWAL OF SUBSCRIPTION WILL GREATLY ASSIST IN THE ASSURANCE OF THE FUTURE OF SOFTEX.

SUBSCRIPTION RENEWAL

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STATE.....

POSTCODE.....

PLEASE ENROL ME FOR SIX FURTHER ISSUES OF SOFTEX MAGAZINE. I ENCLOSE CHEQUE/MONEY ORDER FOR $25.00.

SOFTEX SUPPLEMENT

NEW PRODUCT: GRAPHX

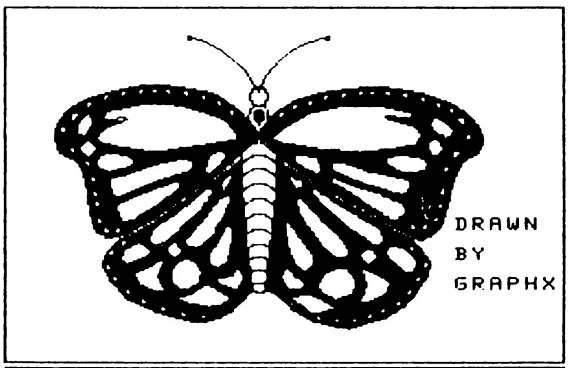
A new Australian graphics program with facilities like those of 'Macpaint', written in Assembly Language and is Menu and Function Key driven.

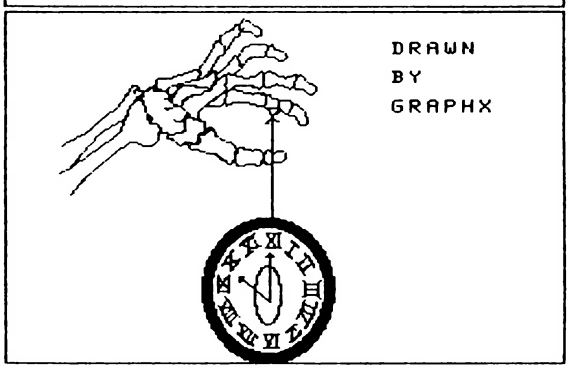
Features include:-
Free-hand drawing and erasing.
A powerful zoom for close up work.
Complete control over colours and ability to repaint parts of a picture.
Pictures created can be printed out on your printer, see samples.
Portions of a picture may be 'picked up' and copied one or many times.
Pictures may be saved to disk, displayed or worked on later.
A sophisticated circle facility allows circles and ellipses to be drawn very easily.
Help information available on screen.
A typewriter mode allowing the adding of text or labels to your graphics.
A clipboard facility lets you store parts of your picture or often used shapes or special alphabets for future use.
A 48 page instruction manual.

Equipment required: TI-99/4A Console, 32K Memory, 1 Disk Drive, a Joystick and either Editor/Assembler, Mini-Memory or Extended Basic modules. An RS232 and printer is required to print your graphics.

Price: $50.00 plus $2.00 Postage.

Order which system you wish, ie.:-
Mini-Memory (has larger clip board facility)
Editor/Assembler
Extended Basic
All versions are same price.





SOFTEX Price List

P & P RATES

A	$ 1.00	D	$ 5.00
B	$ 2.00	E	$10.00
C	$ 3.00	F	$15.00
		G	$20.00
		H	$35.00

PRINTERS	Softex Price	P&P
AMUST DT-80/2, 100 cps.	$340.00	E
AMUST DT100, 100cps	$360.00	E
AMUST P88-2,120 cps.	$490.00	E
BROTHER HR-15 (Centronic)	$770.00	F
BROTHER HR-15 (RS232)	$810.00	F
BROTHER HR-25 (Centronic)	$1220.00	G
BROTHER HR-25 (RS232)	$1270.00	G
BROTHER EP-44	$350.00	E
BROTHER HR-5	$280.00	E
TI 850 Printer	$1010.00	G
TI 855 Printer	$1300.00	G
Misc., Monitors, etc.		
Diskette Boxes, Modular (ea)	$6.00	B
DT100S, Serial Card	$125.00	D
P88-2 Serial Card, 2K Buffer	$125.00	D
P88 PAR Parallel 4K buffer	$125.00	D
P88S Serial Card inc 2K Buffer	$125.00	D
GR1 Amust 12, 12in. Green Scr	$199.00	E
AM1 Amust 12, 12in. Taxan Amber Screen, Hi Res.	$220.00	E
Monitor Stand	$35.00	D
DT-80 Ribbon	$12.95	B
P88/2 Ribbon	$20.00	B
DT100 Ribbon	$16.50	B
DT80-2 Ribbon	$12.95	B
Centronics Printer Cable	$40.00	A
RS-232 Printer Cable	$40.00	A
EP-44 Printer Cable	$30.00	A
C-62 Cassette Tape	$1.50	A
Shuttle Modems	$266.00	D
Modem Cable	$35.00	A
Ext Disk Drive Cable- 1 Drive	$25.00	A
Ext Disk Drive Cable- 2 Drives	$35.00	A
Axiom ParallAx Interface	$170.00	D

Books		
Programs for the TI Home Comp.	$24.00	B
Introduction to Assembly Language for the TI Home Computer	$28.00	B
Home Computer Mag.,vol 4,No.2	$5.00	A
Home Computer Mag.,Vol 4,No.3	$5.00	A
Personal/Professional Computers -How they can help you?	$20.00	A
Disk Drives		
National Slimline, DS/DD	$220.00	E
Chinon Slimline, DS/DD	$300.00	E
MPI B-52 Full size, DS/DD	$386.00	E
Tandon TM100-2, DS/DD	$386.00	E
Ext. Power Supply & cable	$120.00	E
Double Ext Pwr. Supply & cable	$180.00	E
Xidex SS/DD Disk, Box of 10	$40.00	B
Software		
Brick-Bat Pgm. Cassette	$12.00	
Brick-Bat Pgm. Disk	$15.00	
Finance Advisor Pgm-Disk	$12.00	
SOFTEX Pgms. Iss 1-3 Cass	$12.00	
SOFTEX Pgms. Iss 1-3 Disk	$15.00	
Cartridge Expander	$60.00	C
Data Base Management System	$105.00	D
TI-Count General Ledger	$135.00	
TI-Count Accounts Receivable	$135.00	
TI-Count Accounts Payable	$135.00	
Homework Helper	$60.00	C
Astrology-Horoscope	$70.00	C
99/4A Auto Spell-Check	$59.95	
Graphx	$50.00	B

SOFTEX SUPPLEMENT